

REPORT NUMBER: 301S-MGA-03-001

SAFETY COMPLIANCE TESTING FOR
FMVSS NO. 301S
FUEL SYSTEM INTEGRITY – SCHOOL BUSES

2003 American Transportation Corporation
IC3S530 School Bus
NHTSA No.: C30902

PREPARED BY:
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5000 WARREN ROAD
BURLINGTON, WI 53105



Final Report Date: May 6, 2003

FINAL REPORT

PREPARED FOR:
U.S. DEPARTMENT OF TRANSPORTATION
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
ENFORCEMENT
OFFICE OF VEHICLE SAFETY COMPLIANCE
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WASHINGTON, D.C. 20590

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May 23, 2003
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Technical Report Documentation Page

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16. Abstract A compliance test was conducted on the subject 2003 American Transportation Corp IC3S530 School Bus, NHTSA No. C30902 in accordance with the specifications of the Office of Vehicle Safety Compliance Test Procedure No. TP-301-02 for the determination of FMVSS 301S compliance.					
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TABLE OF CONTENTS

<u>Section</u>		<u>Page No</u>
1	Purpose of Compliance Test and Summary	1
2	Compliance Test Data	2
	Data Sheet 1 – School Bus Data	3
	Data Sheet 2 – School Bus Data	5
4	Instrumentation and Equipment List	7
5	Photographs	8
6	Barrier Information	39

SECTION 1
PURPOSE OF COMPLIANCE TEST AND SUMMARY

A fuel system integrity test was performed on a MY2003 American Transportation Corp IC3S530 School Bus, NHTSA No. C30902, in accordance with the specifications of the Office of Vehicle Safety Compliance (OVSC) Test Procedures TP-301-02 to determine compliance to the requirements of Federal Motor Vehicle Safety Standards (FMVSS) 301S, "Fuel System Integrity - School Buses".

Based on the test results, the MY2003 American Transportation Corp IC3S530 School Bus, NHTSA No. C30902 appears to meet the requirements of FMVSS 301S testing.

This program is sponsored by the National Highway Traffic Safety Administration (NHTSA), under Contract No. DTNH22-02-D-01057.

SECTION 2
COMPLIANCE TEST DATA

The following data sheets document the results of testing on the MY2003 American Transportation Corp IC3S530 School Bus, NHTSA No. C30902.

DATA SHEET 1
SCHOOL BUS DATA

Test Vehicle: **2003 American Transportation Corp IC3S530 School Bus** NHTSA No.: **C30902**
Test Lab: **MGA Research-Wisconsin Operations** Test Date: **4/22/03**

GENERAL VEHICLE IDENTIFICATION

School Bus Manufacturer:	American Transportation Corporation	
School Bus Model:	2003 ATC IC3S530	
Build Date:	10/02/02	
Incomplete Vehicle Manufactured By:	International	
Build Data for Bus Chassis:	—	
School Bus GVWR (kg):	12474	
School Bus GAWR Front (kg):	4536	
School Bus GAWR Rear (kg):	7938	
School Bus VIN:	4DRBRABN73B955119	
No. of Designated Seating Positions (DSP) including Driver:	65	
School Bus NHTSA No.:	C30902	
Bus Body Color:	Yellow	
Engine Displacement	7.3L	
No. of Cylinders:	8	
Fuel Pump Actuation:	Mechanical Pump "ON" with engine	
School Bus Width (mm):	2373	
School Bus Length (mm):	10751	
Bus Unloaded Vehicle Weight (UVW) (kg):	7309	
Bus Occupant Load:	3456 kg – Passenger 68 kg – Driver 3524 kg – Total	
Target Bus Test Weight (SBTW) (kg):	10833	
Actual (SBTW) (kg):	10833	
School Bus Tire Manufacturer:	Goodyear	
	Front	Rear
Rec. Cold Tire Inflation Pressure (kpa):	758	690
Tire Size:	10R/225	10R/225
Load Range:	F	F

DATA SHEET 1 (CONTINUED)

SCHOOL BUS DATA

Test Vehicle: **2003 American Transportation Corp IC35530 School Bus** NHTSA No.: **C30902**
 Test Lab: **MGA Research-Wisconsin Operations** Test Date: **4/22/03**

GENERAL VEHICLE IDENTIFICATION

SCHOOL BUS ATTITUDE

	Units	LF	RF	LR	RR
As Received:	mm	NR	NR	NR	NR
Pre-Test:	mm	1216	1220	1133	1135
Post-Test:	mm	1430	1468	1129	1129

NR = Not Recorded

Weight of Fuel:	3.19 kg/liter (7.03 lbs./gallon)
Fuel Tank Capacity (liters/kg):	284 liters/906 kg (75 gallons/527 lbs.)
Tank Test Volume (liters/kg):	258.5 liters/824.6 kg (68.3 gallons/480 lbs.)

TEST VEHICLE WEIGHTS

	Units	As Delivered (UVW)			As Tested (ATW)		
		Front	Rear	Total	Front	Rear	Total
Left	kg	1583	2032		1809	3486	
Right	kg	1542	2152		1762	3776	
Ratio	%	42.7	57.3		33.0	67.0	
Totals	kg	3125	4184	7309	3571	7262	10833

COMMENTS: NONE

Recorded By: Chris Hand

Approved By: Michael J. [Signature]

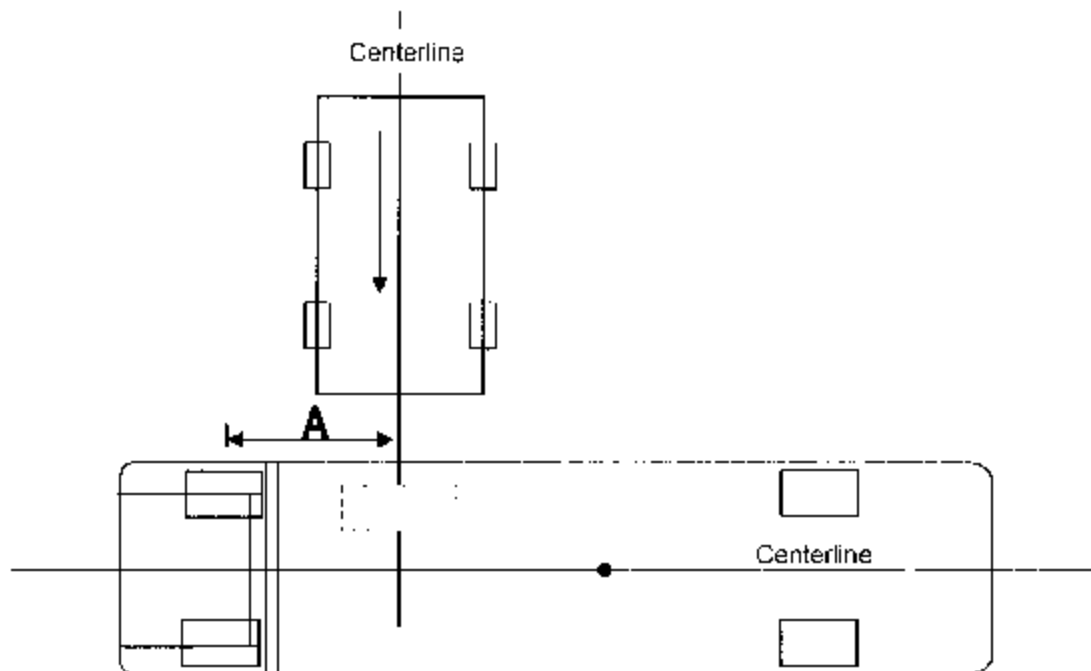
Date: 4/22/03

DATA SHEET 2
SCHOOL BUS IMPACT DATA

Test Vehicle:	2003 American Transportation Corp IC3S530 School Bus	NHTSA No.:	C30902
Test Lab:	MGA Research-Wisconsin Operations	Test Date:	4/22/03

Time of Impact:	10:32 am
Ambient Temperature (°C)	21.1
Barrier Velocity – Speed Trap 1 (kph):	47.5
Barrier Velocity – Speed Trap 2 (kph):	47.3
Barrier Penetration:	378 mm

INDICATE IMPACT POINT BELOW:



LEGEND: Red dotted line indicates location of fuel tank
 Arrow indicates point and angle of barrier impact (C_i of arrow coincides with C_i of monorail).
 A = Distance from Front Axle CL to Barrier CL = 1860 mm
 Impact Point Deviation: 3 mm Down, 0 mm Lateral

DATA SHEET 2 (CONTINUED)
SCHOOL BUS IMPACT DATA

Fuel Spillage Noted:	No
Failure, if applicable:	None

Stoddard Solvent Spillage Measurements

Timeframe	Description	Allowable Spillage	Measured Spilled	Results
$T_0 - T_1$	Time Zero to Cessation of Motion	31 grams (1 ounce)	0	PASS
$T_1 - T_2$	Cessation of Motion to 5 minutes after Cessation of Motion	156 grams (5 ounces)	0	PASS
$T_2 - T_3$	5 Minutes after Cessation of Motion to 30 minutes after Cessation of Motion	31 grams (1 ounce) per minute 933 grams (30 ounces) Total Allowed	0	PASS

ADDITIONAL FAILURE DETAILS: None

Recorded By:

Chris Howard

Approved By:

Michael [Signature]

Date: 4/22/03

SECTION 4
INSTRUMENTATION AND EQUIPMENT LIST

Test Vehicle: **2003 American Transportation Corp IC3S530 School Bus** NHTSA No.: **C30902**
Test Lab: **MGA Research-Wisconsin Operations** Test Date: **4/22/03**

Equipment	Description	Serial No.	Cal. Date	Next Cal. Date
Counter/Timer	DCI	939095	10/25/02	10/25/03
Counter/Timer	DCI	939094	10/25/02	10/25/03
Stop Watch	Cole Pamer	9441010	3/28/03	3/28/04
Vehicle Scales	GSE	212091 & 212092	12/26/02	6/26/03
Tire Pressure Gauge	Dill	MGA05133	10/16/02	10/16/03
Tape Measure	Stanley Powerlock 5M	146	4/8/03	10/9/03
Temp. Indicator	Fluke Probe with Multimeter	944939	10/16/02	10/16/03
Fluke Meter	Fluke	76270715	10/8/02	10/6/03

SECTION 5 PHOTOGRAPHS

TABLE OF PHOTOGRAPHS

<u>No.</u>		<u>Page No.</u>
1	Pre-Test Front View of School Bus	9
2	Post-Test Front View of School Bus	10
3	Pre-Test Left Side of School Bus	11
4	Post-Test Left Side of School Bus	12
5	Pre-Test Rear View of School Bus	13
6	Post-Test Rear View of School Bus	14
7	Pre-Test Right Front $\frac{3}{4}$ View of School Bus	15
8	Post-Test Right Front $\frac{3}{4}$ View of School Bus	16
9	Pre-Test Left Rear $\frac{3}{4}$ View of School Bus	17
10	Post-Test Left Rear $\frac{3}{4}$ View of School Bus	18
11	Vehicle Certification and Tire Information Label	19
12	Pre-Test Impact Target	20
13	Post-Test of Impact Location	21
14	Post-Test of Impact Location #2	22
15	Pre-Test of Barrier (left side)	23
16	Post-Test of Barrier (left Side) Penetration	24
17	Pre-Test of Barrier (right side)	25
18	Post-Test of Barrier (right side)	26
19	Pre-Test of Barrier	27
20	Post-Test of Barrier Penetration	28
21	Pre-Test of Fuel Cap and Tank Cage	29
22	Post-Test of Fuel Cap and Tank Cage	30
23	Pre-Test of Fuel Tank Cage (View #1)	31
24	Post-Test of Fuel Tank Cage (View #1)	32
25	Pre-Test of Fuel Tank Cage (View #2)	33
26	Post-Test of Fuel Tank Cage (View #2)	34
27	Pre-Test of Fuel Tank Cage (View #3)	35
28	Post-Test of Fuel Tank Cage (View #3)	36
29	Speed Trap Counter Display	37
30	Impact	38

Task Name: 2003 American Transportation Corporation
Procedure: FMVSS 301 Side Impact Test

Test Date: April 22, 2003

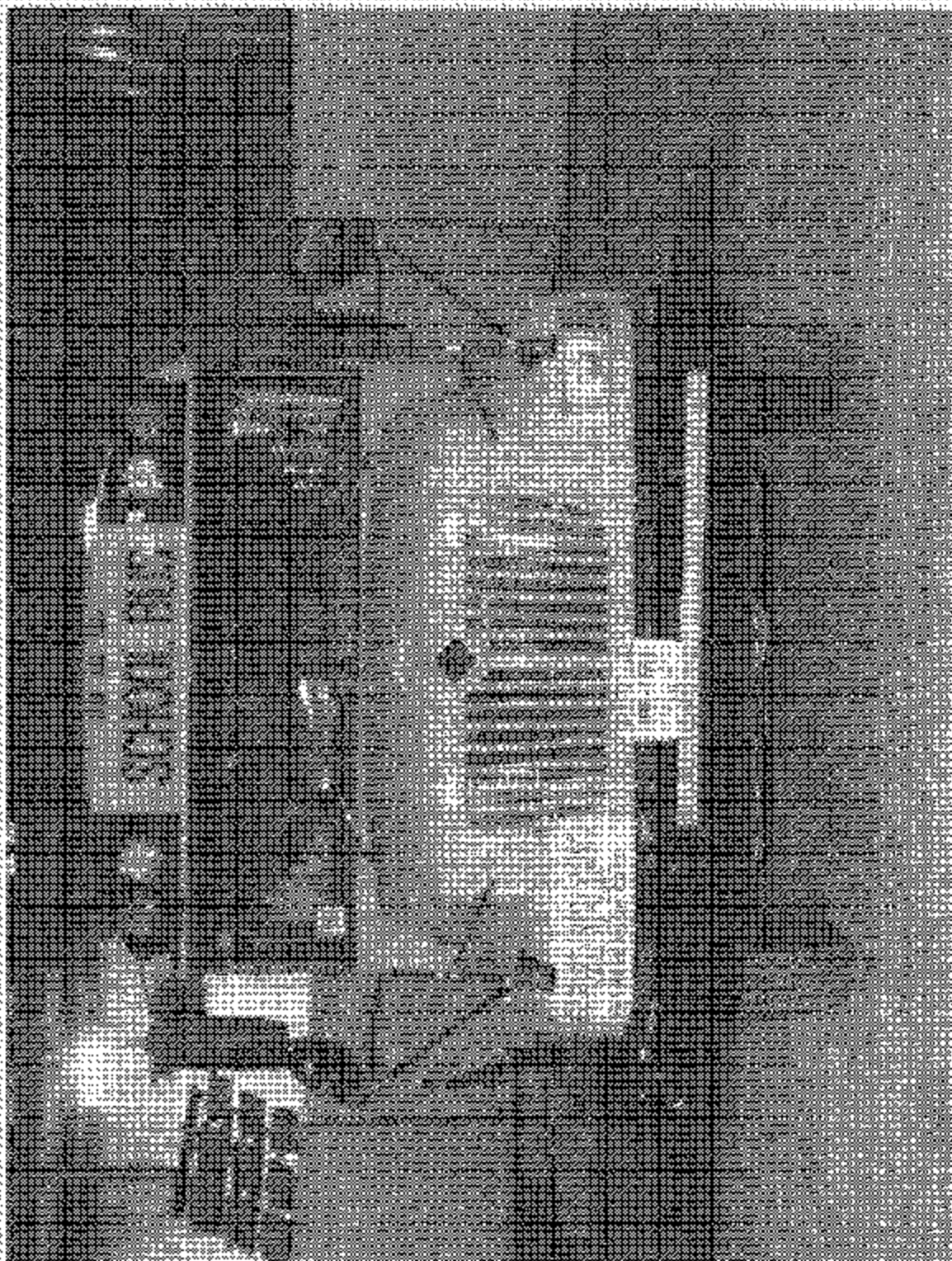
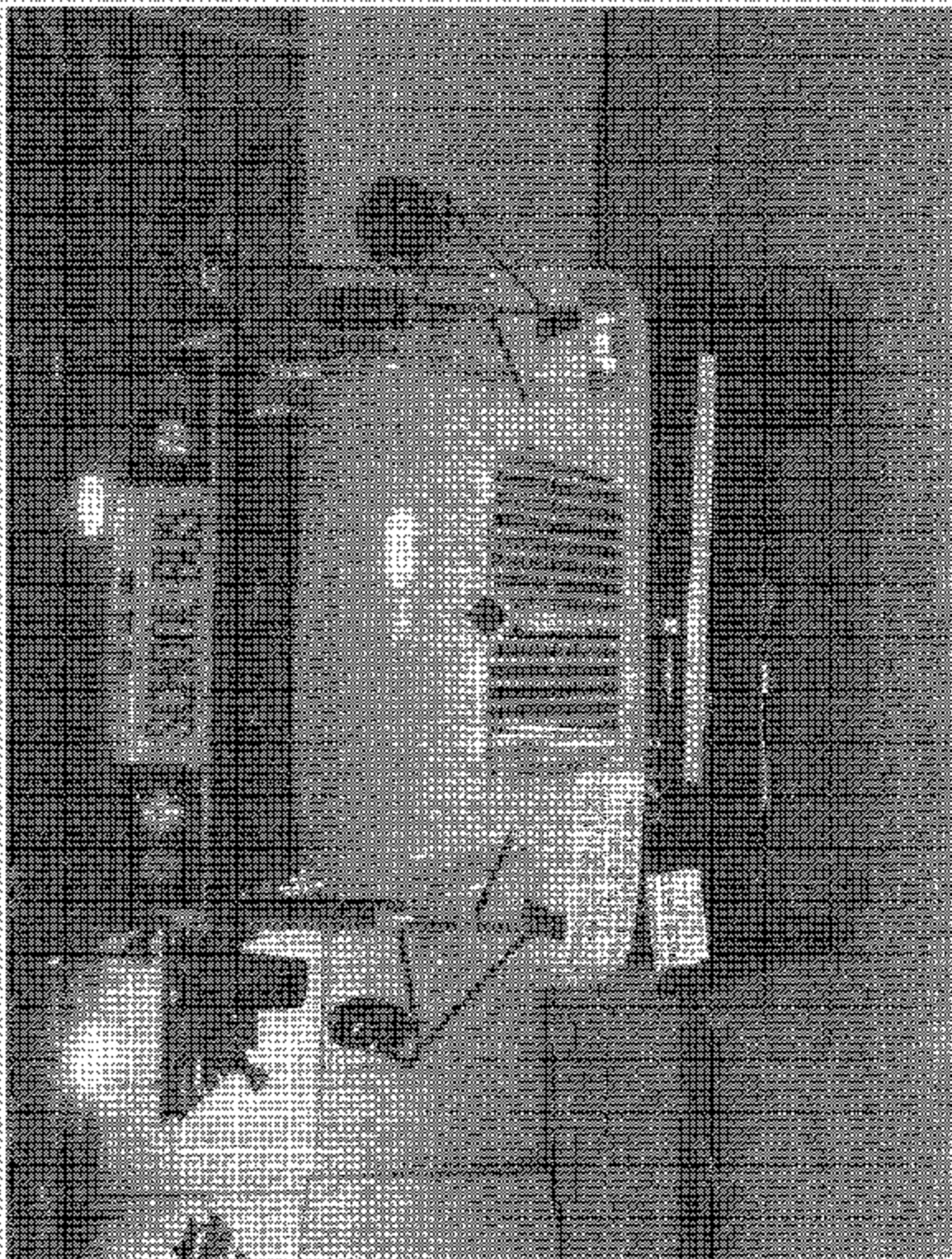


Figure 1: Side View of Vehicle

Test Vehicle: 2003 American Transportation Corporation

Procedure: FMVSS 301 Side Impact Test

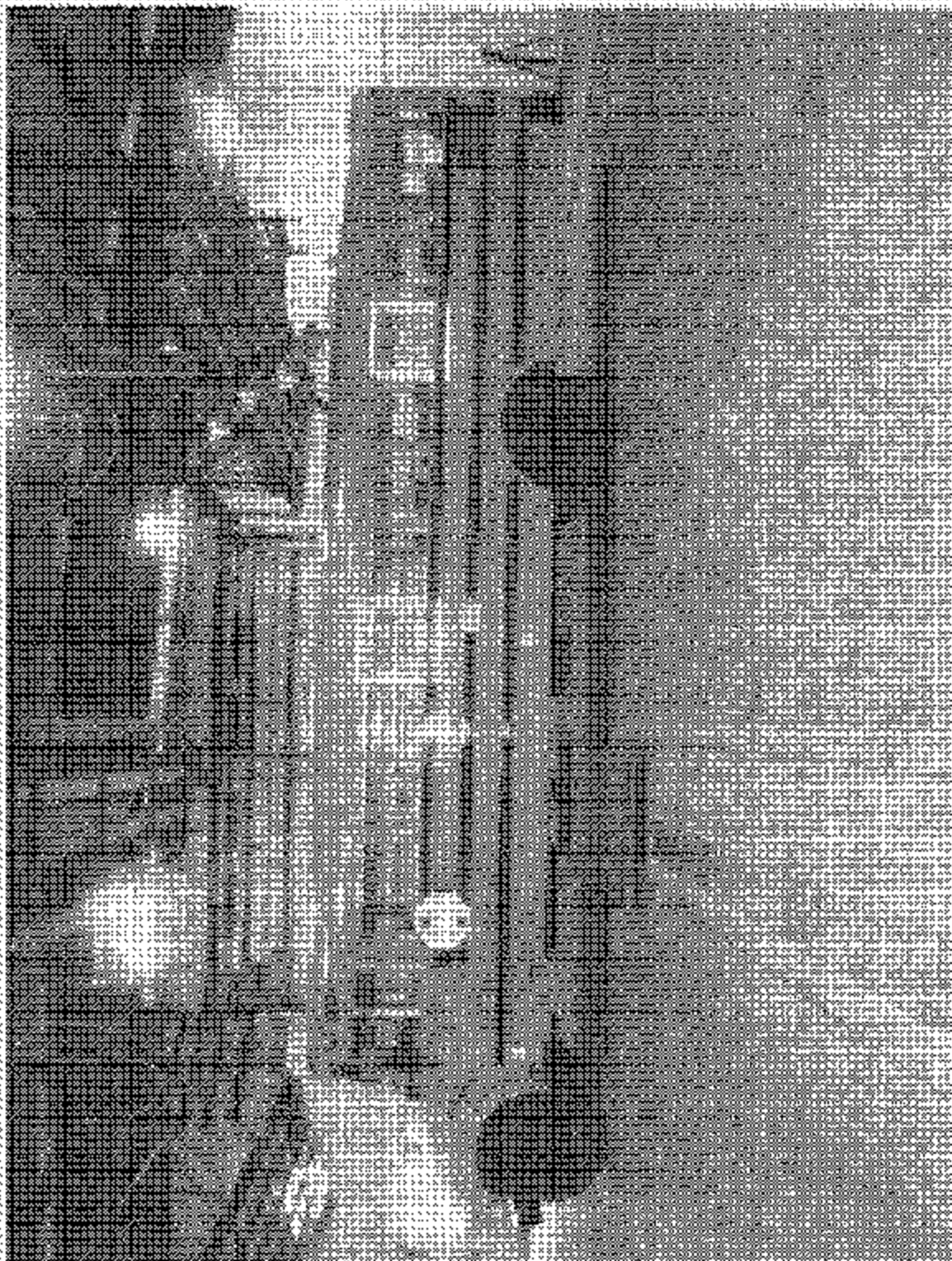
Test Date: April 22, 2003



Post-Test Front View of School Bus

Test Vehicle: 2003 American Transportation Corporation
Procedure: FMVSS 301 Side Impact Test

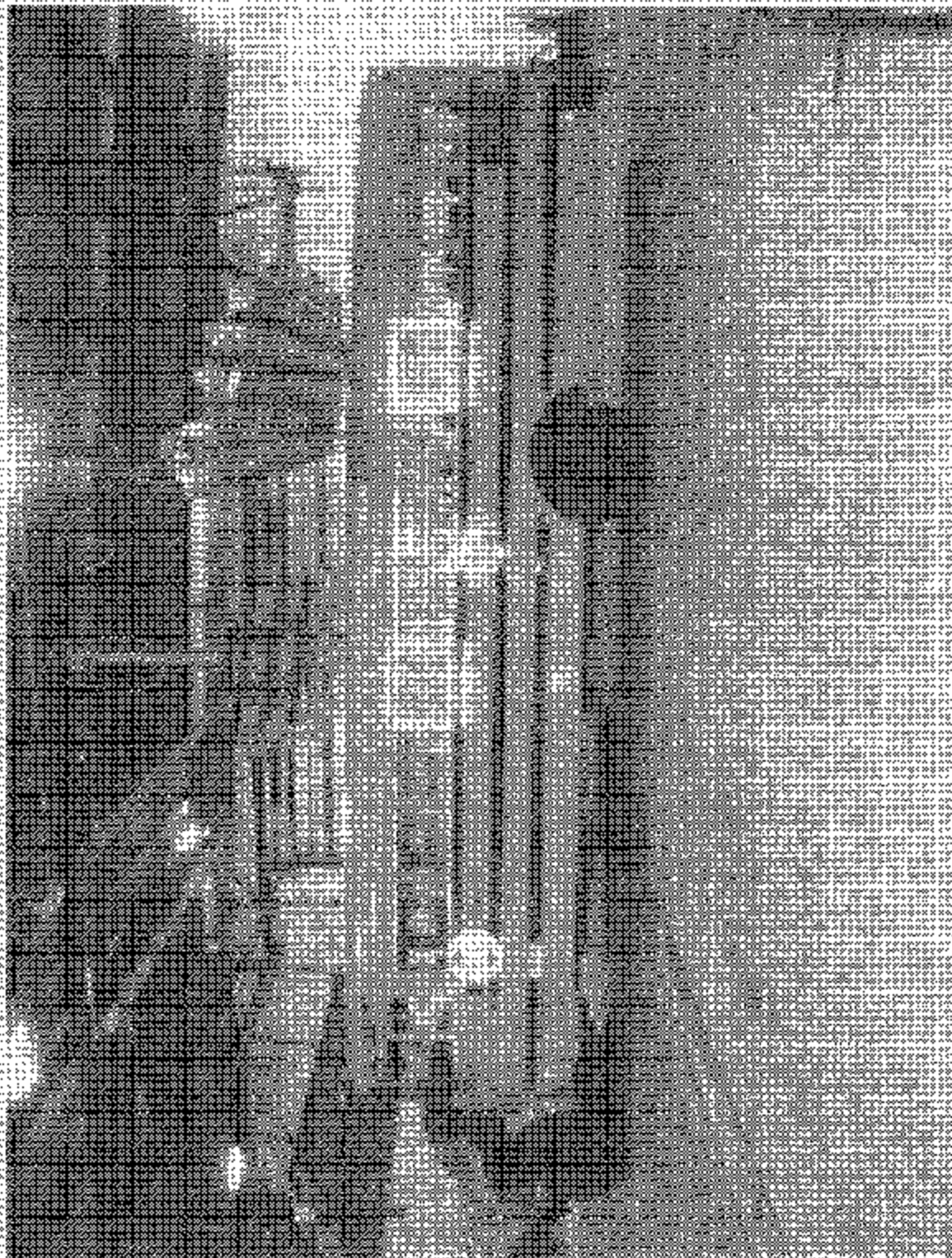
Test Date: April 22, 2003



Print Test List Side of Screen File

Test Vehicle: 2003 American Transportation Corporation
Procedure: FMVSS 201 Side Impact Test

Test Date: April 22, 2003



Test Report: 2003 American Transportation Corporation

Test Vehicle : 2003 American Transportation Corporation
Flavss 301 Side Impact Test

Test Date: April 22, 2003

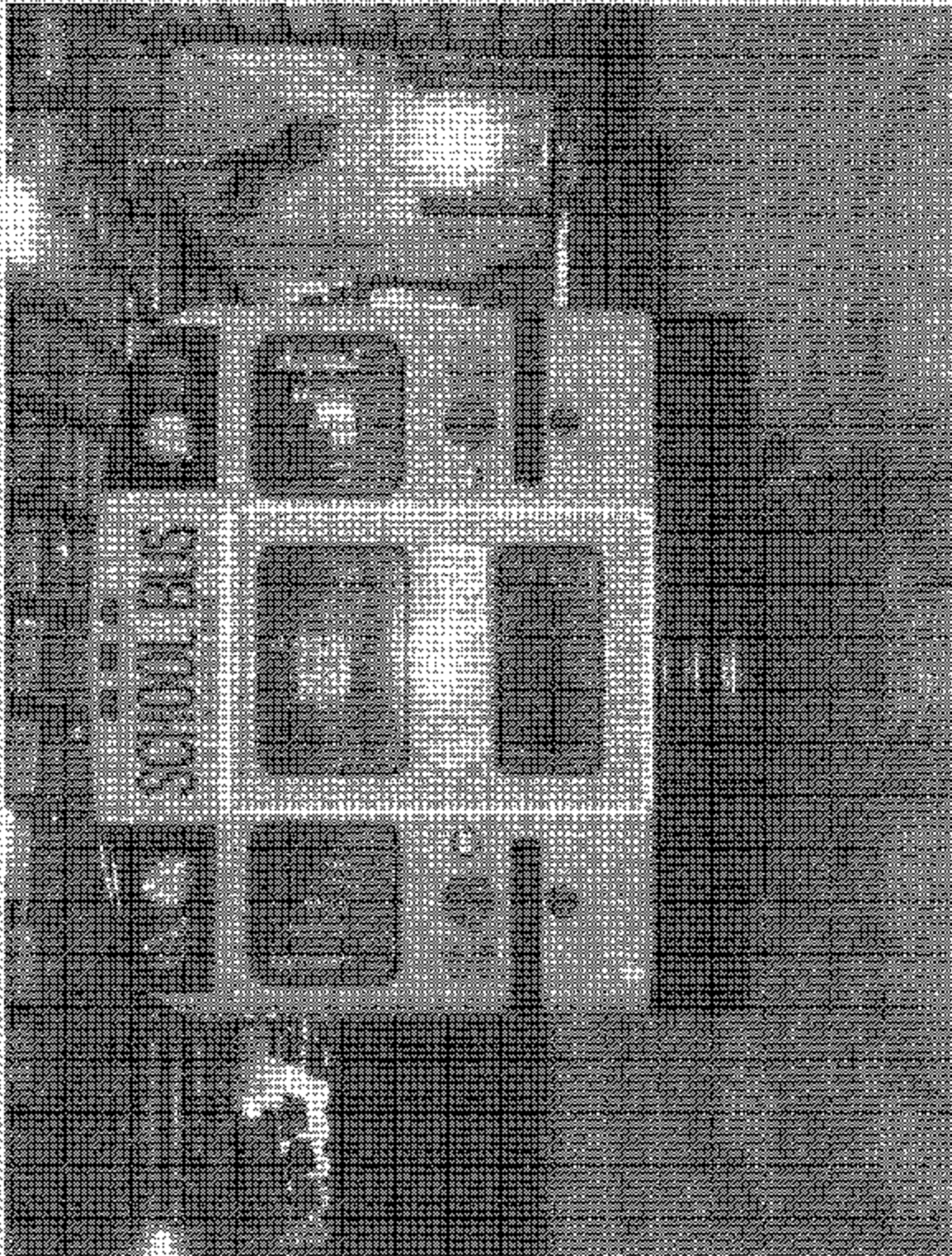
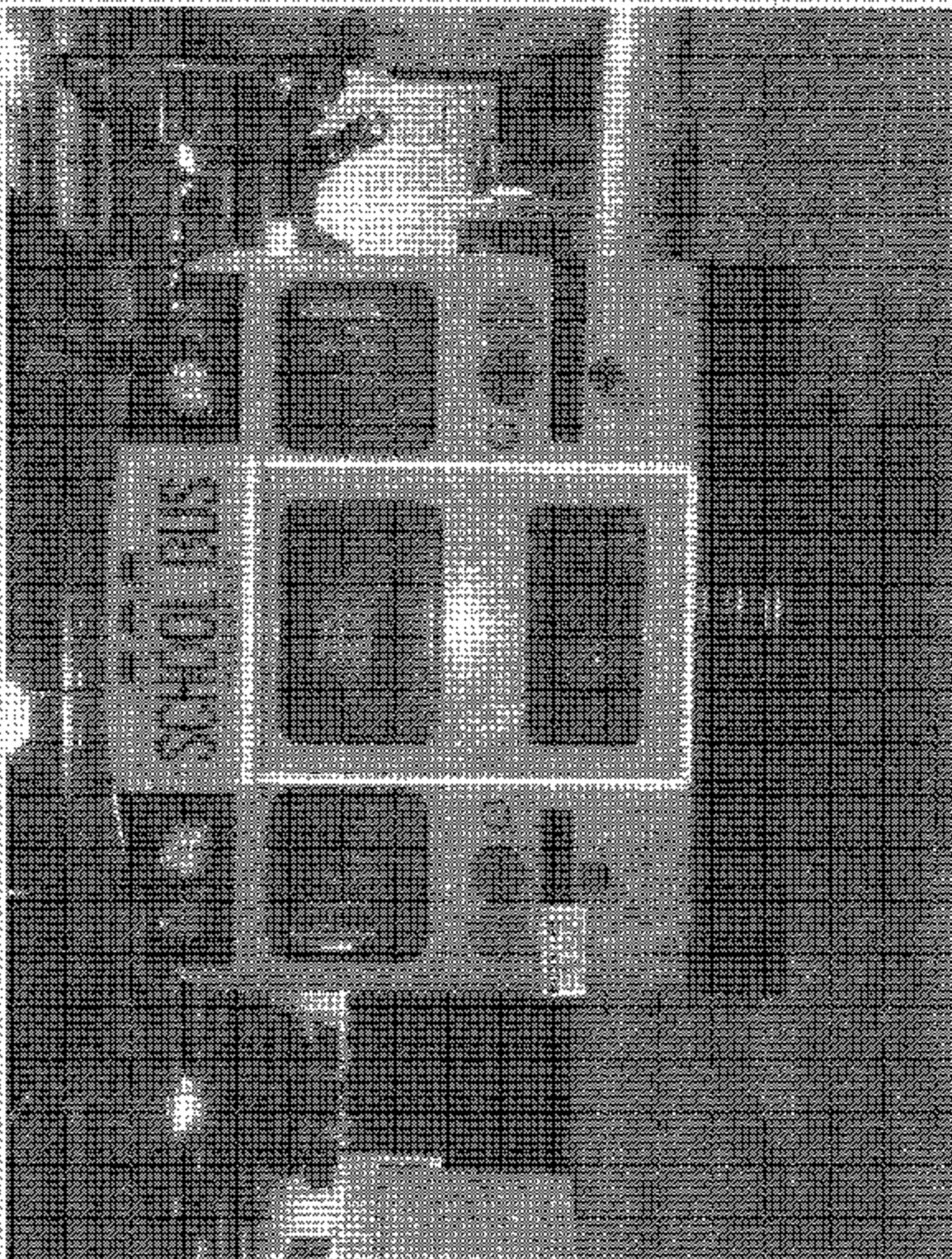


Fig. 101 Real View of School Bus

Test Vehicle: 2003 American Transportation Corporation

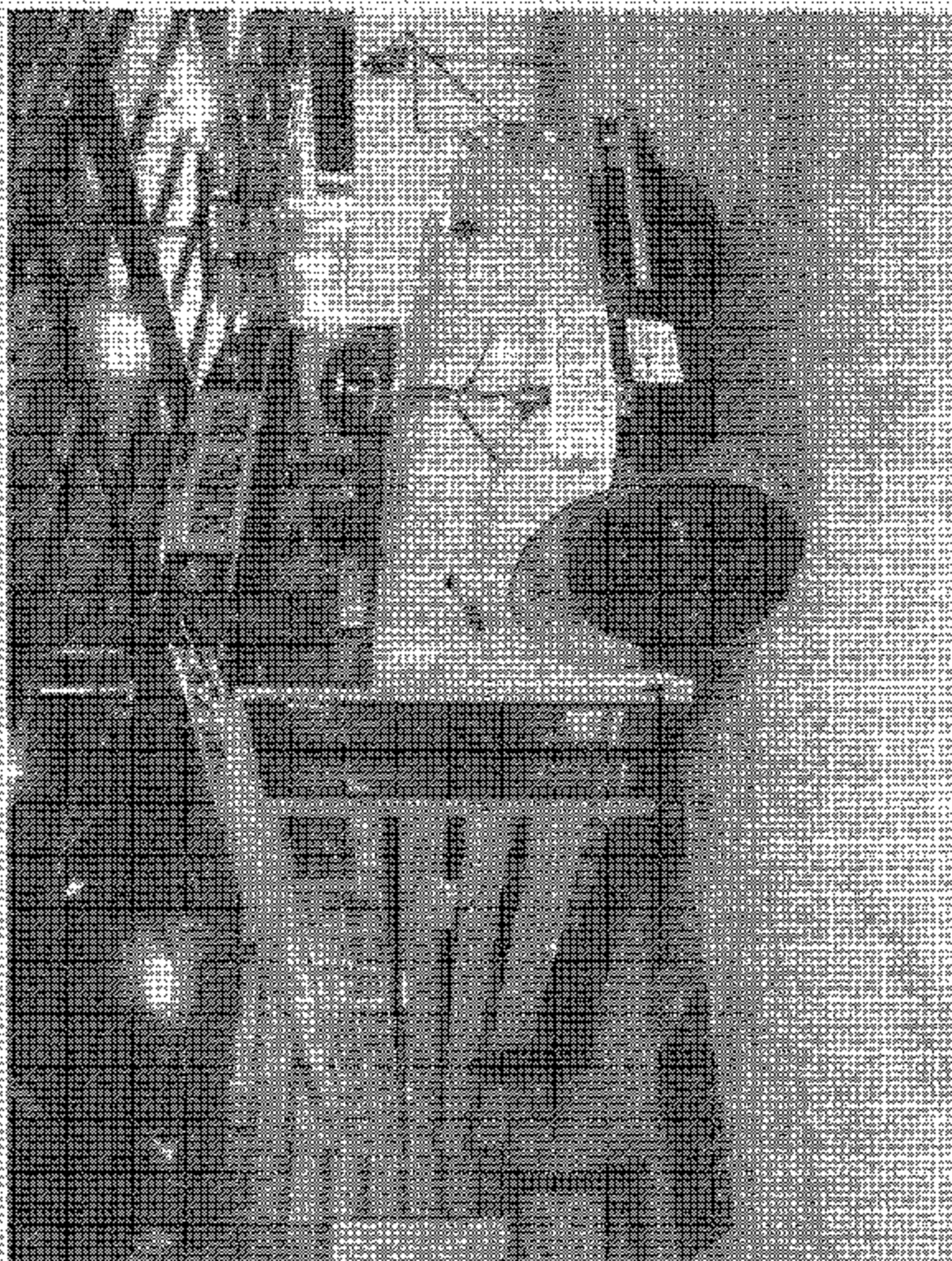
Configuration: SNVSS 301 Side Impact Test

Test Date: April 22, 2003



Post Test Rear View of School Bus

Test Vehicle: 2003 American Transportation Corporation
Procedure: FMVSS 301 Side Impact Test
Test Date: April 22, 2003

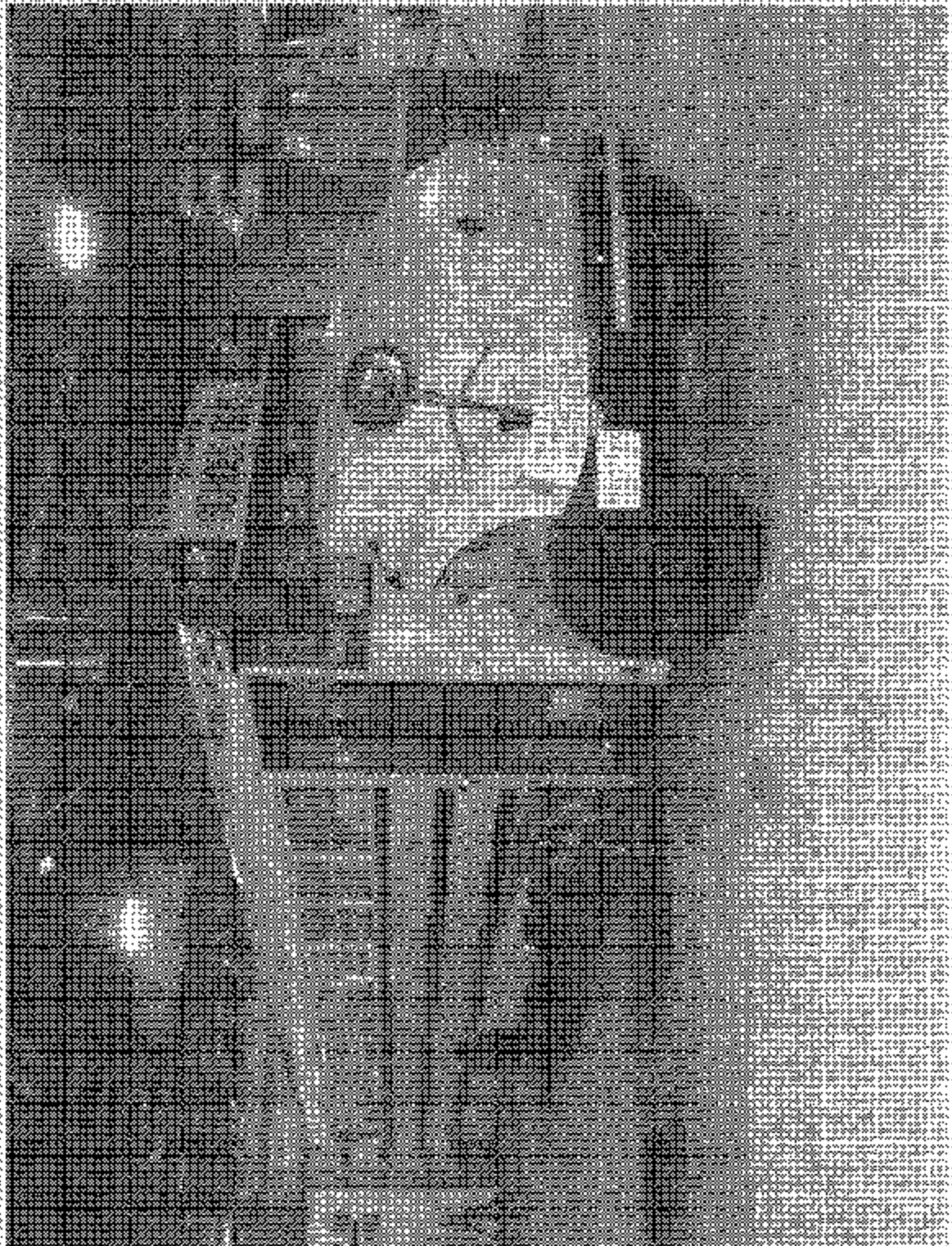


Pre-Test Right (Front) View of Subject Bus

Test Vehicle: 2003 American Transportation Corporation

Procedure: FMVSS 301 Side Impact Test

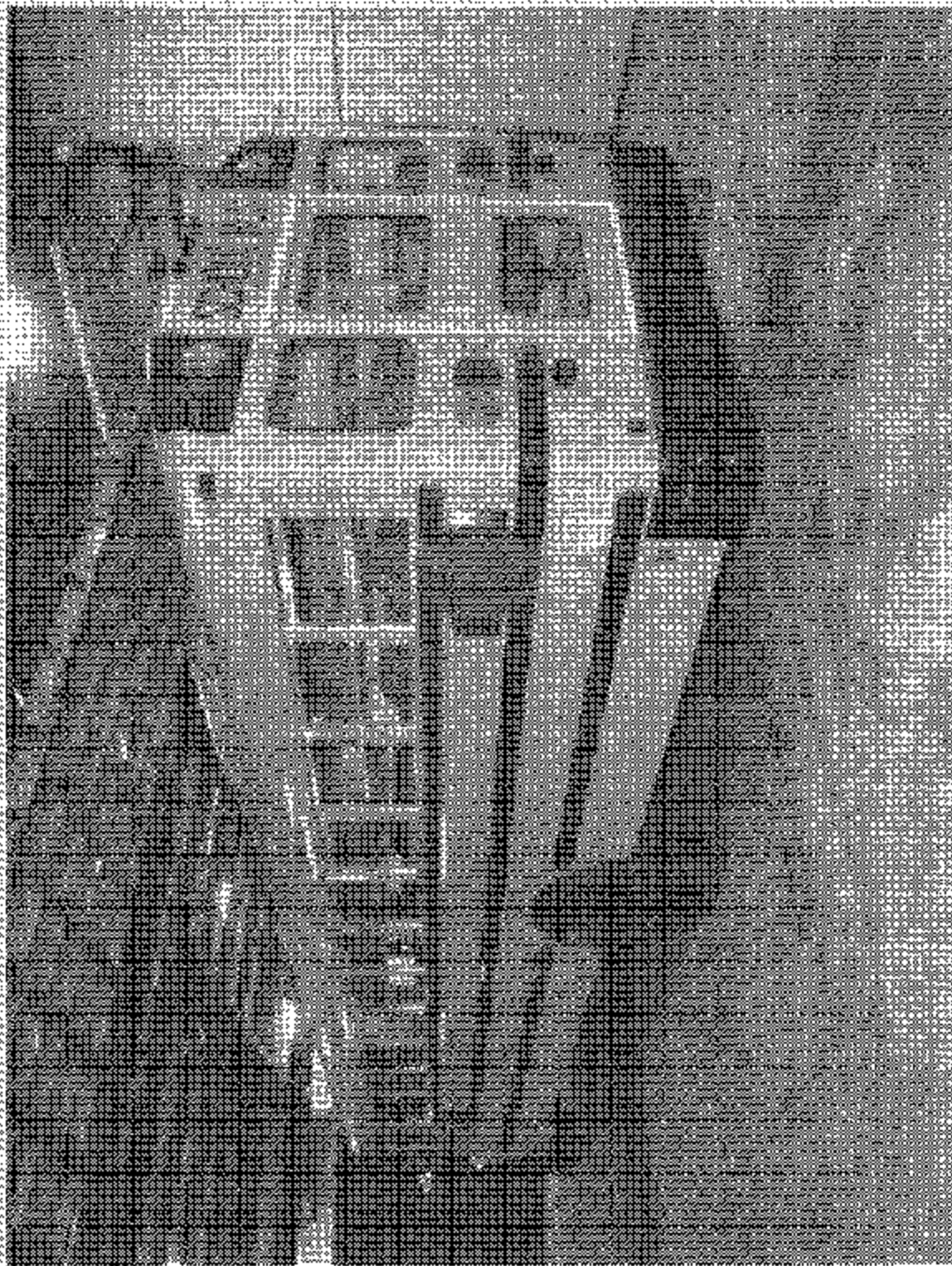
Test Date: April 22, 2003



Post-Impact View of School Bus

Test Vehicle: 2003 American Transportation Corporation
Procedure: FMVSS 301 Side Impact Test

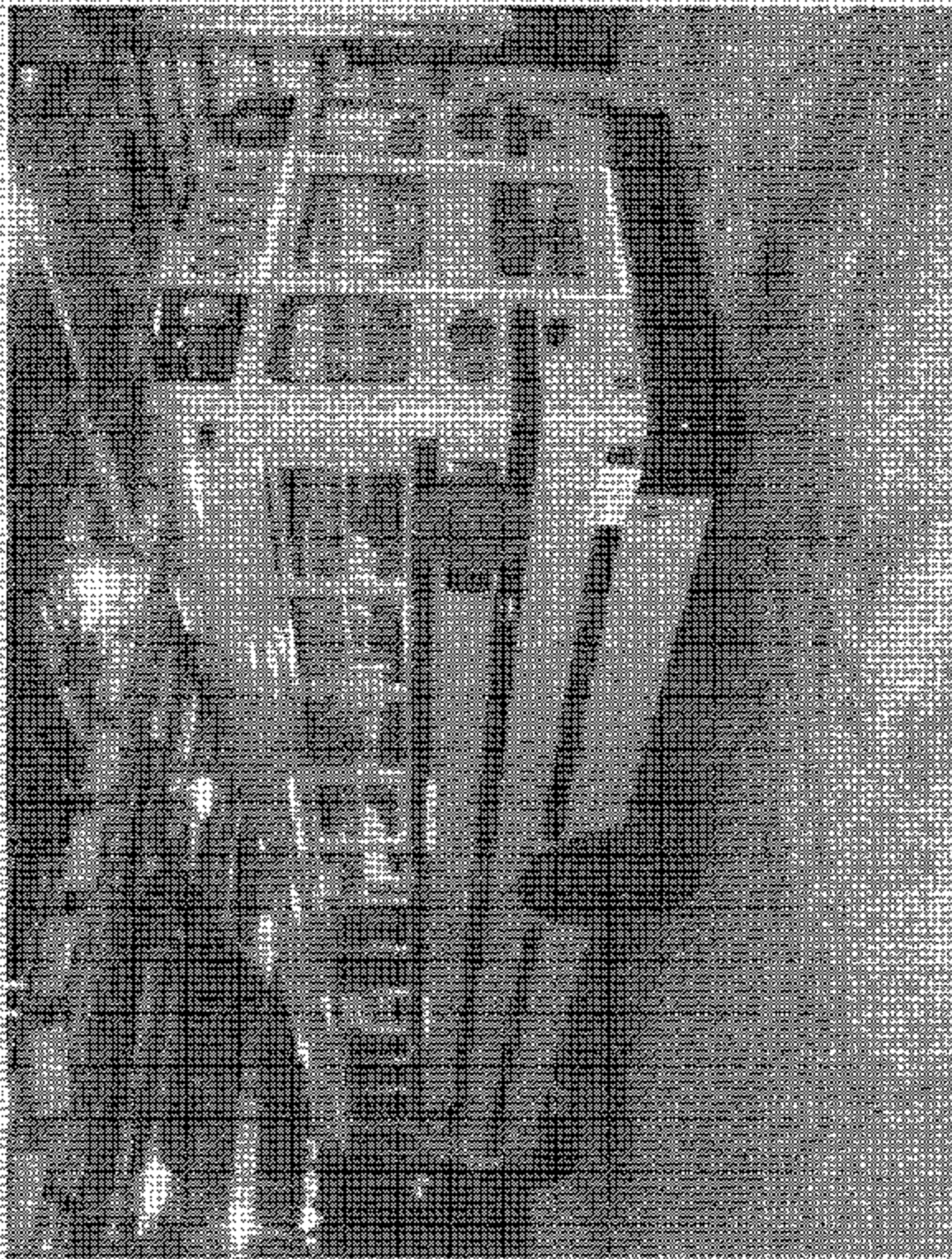
Test Date: April 23, 2003



Pre-Test Left Rear 3/4 View of School Bus

Test Vehicle: 2005 American Transportation Corporation
Procedure: FMVSS 301 Side Impact Test

Test Date: April 23, 2003



Post-Impact View: Rear 3/4 View of Sealed Area

2003 American Transportation Corporation

FMVSS 301 Side Impact Test

Des: Date. April 22, 2003

RE:
1. 10/1/47
2. 10/1/47
3. 10/1/47
4. 10/1/47
5. 10/1/47
6. 10/1/47
7. 10/1/47
8. 10/1/47
9. 10/1/47
10. 10/1/47

Vehicle Certification and Tire Information Label

Test Vehicle: 2003 American Transportation Corporation
Procedure: FMVSS 301 Side Impact Test

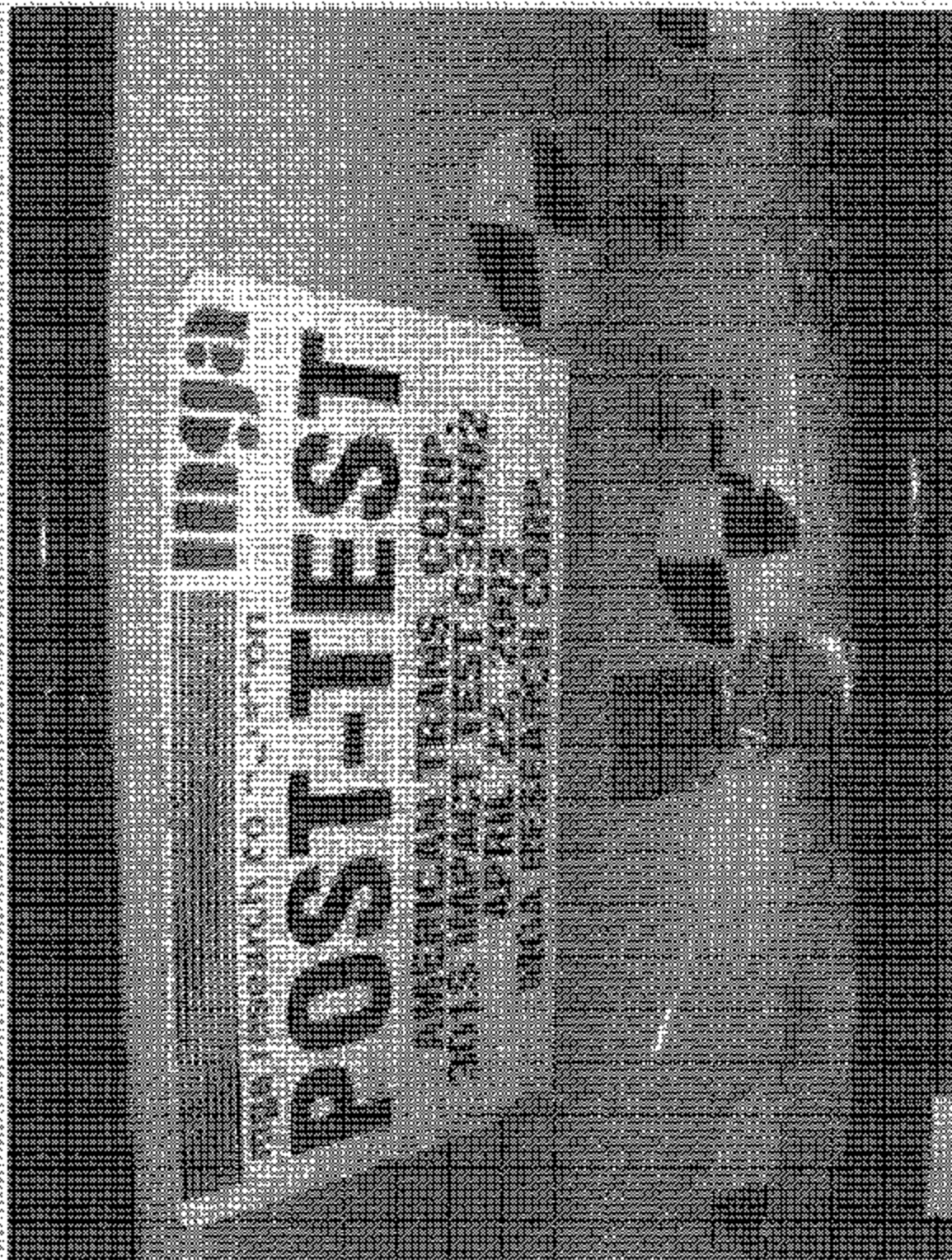
Test Date: April 22, 2003



Pre-Test Impact Target

Test Vehicle: 2003 American Transportation Corporation
Procedure: FMVSS 301 Side Impact Test

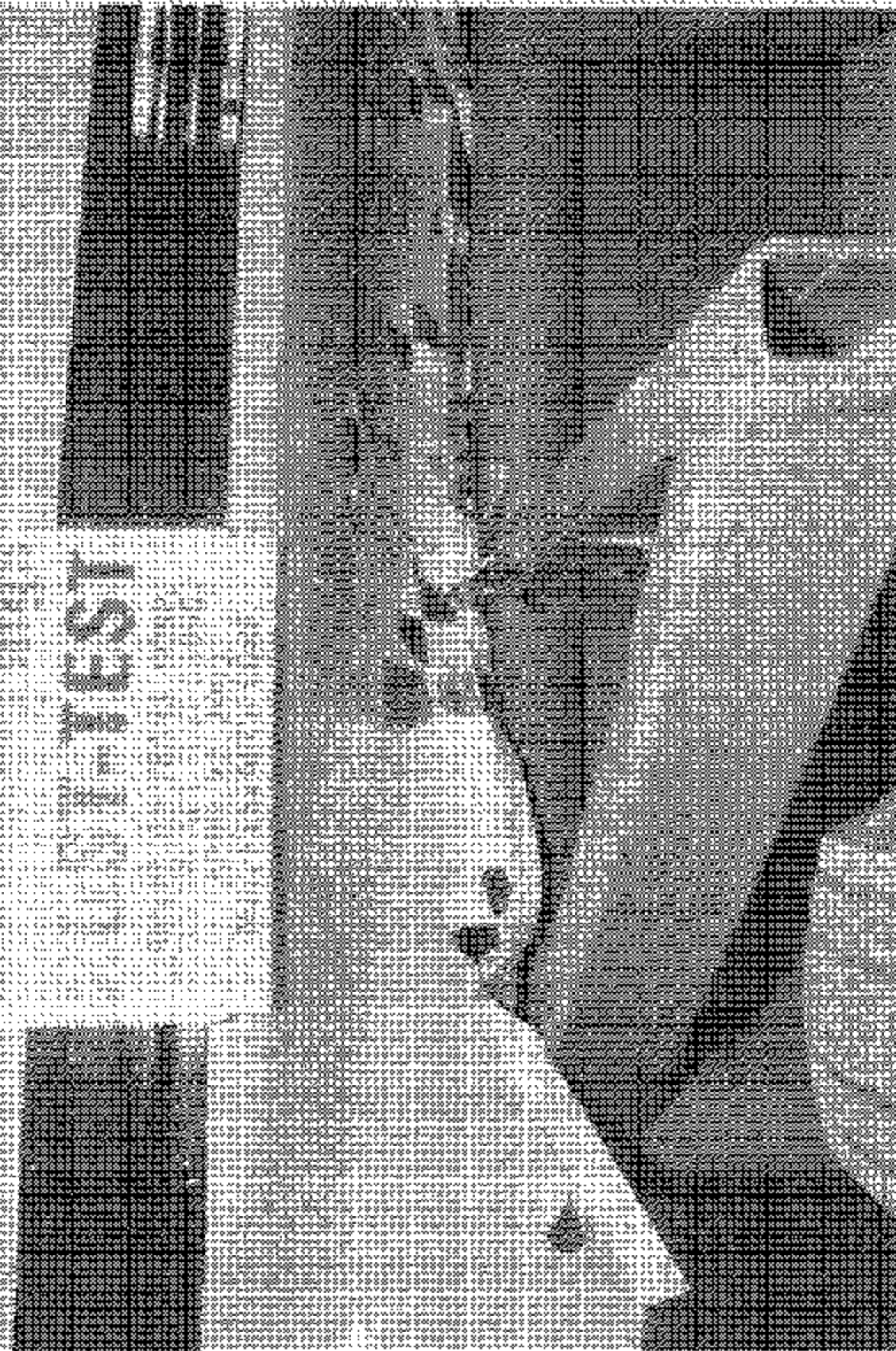
Test Date: April 22, 2003



Post-Test of Impact Location

Test Vehicle: 2003 American Transportation Corporation
Procedure: FMVSS 301 Side Impact Test

Test Date: April 22, 2003

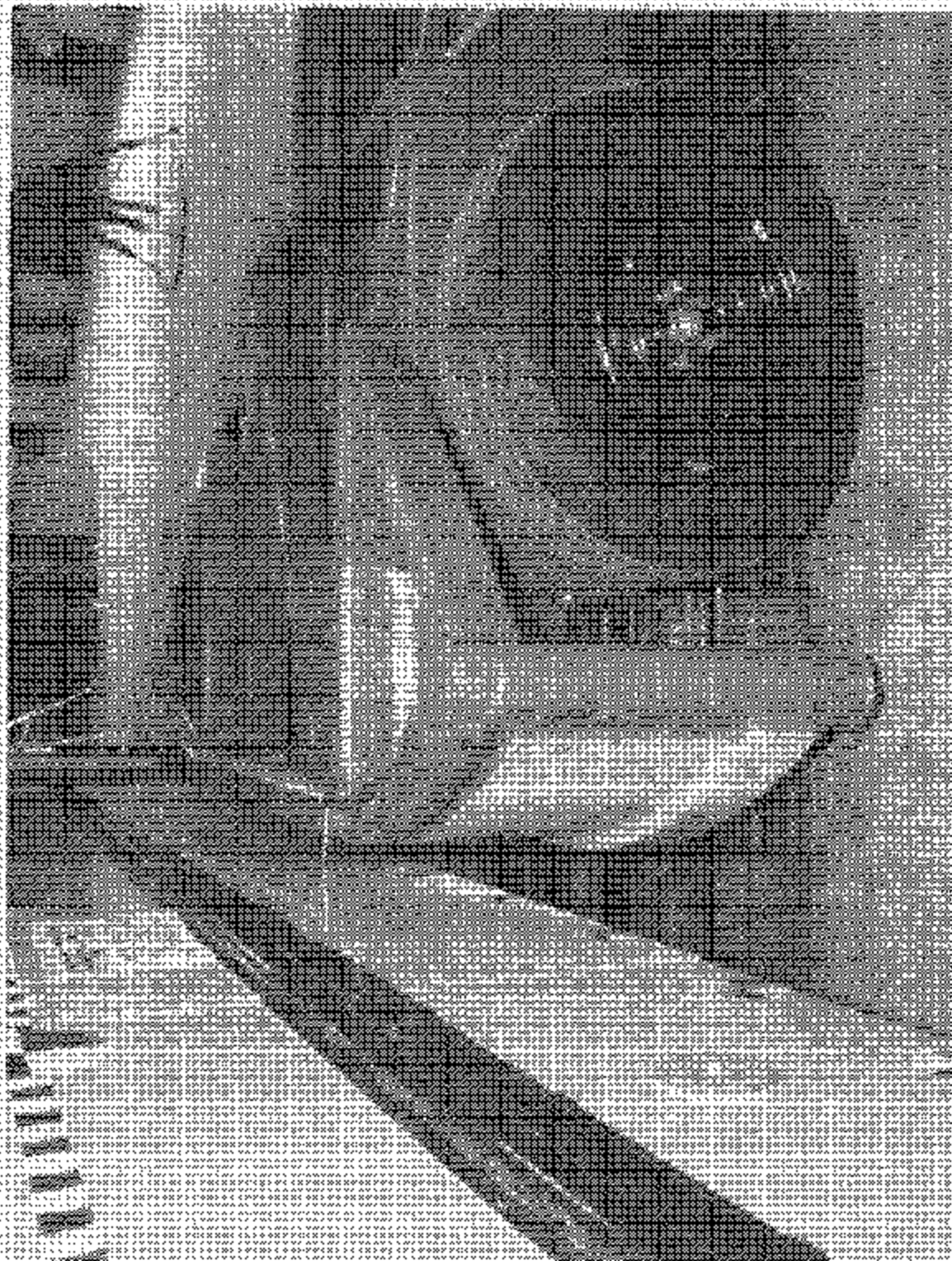


Post-Test Impact Location #2

Test Vehicle: 2003 American Transportation Corporation

Procedure: FMVSS 301 Side Impact Test

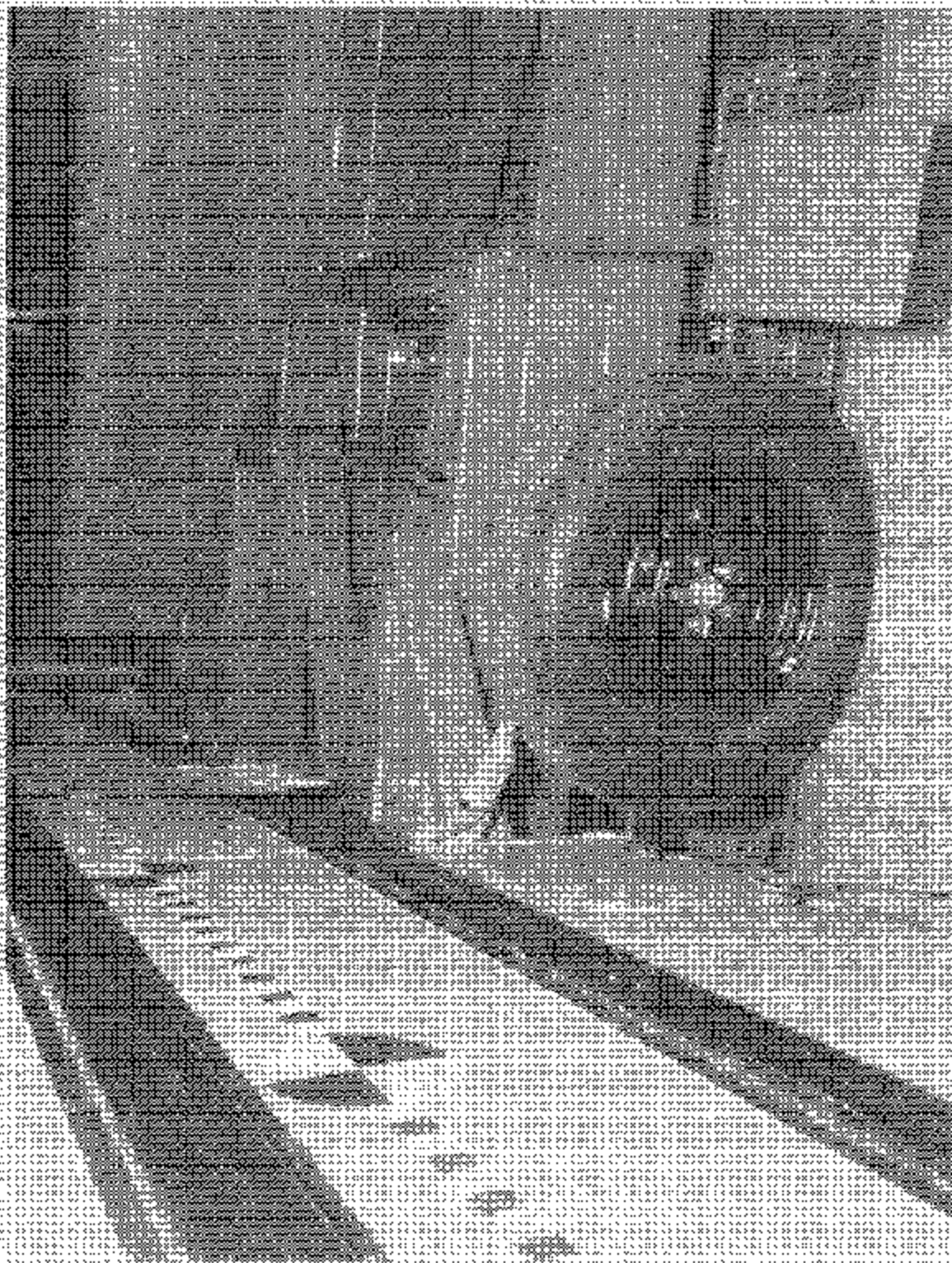
Test Date: April 23, 2003



Pre-Test of Barred (test area)

Test Vehicle: 2003 American Transportation Corporation
Procedure: FMVSS 301 Side Impact Test

Test Date: April 22, 2003



Post Test Vehicle (Left) Position

Test Vehicle: 2003 American Transportation Corporation
Procedure: FMVSS 201 Side Impact Test

Test Date: April 23, 2003

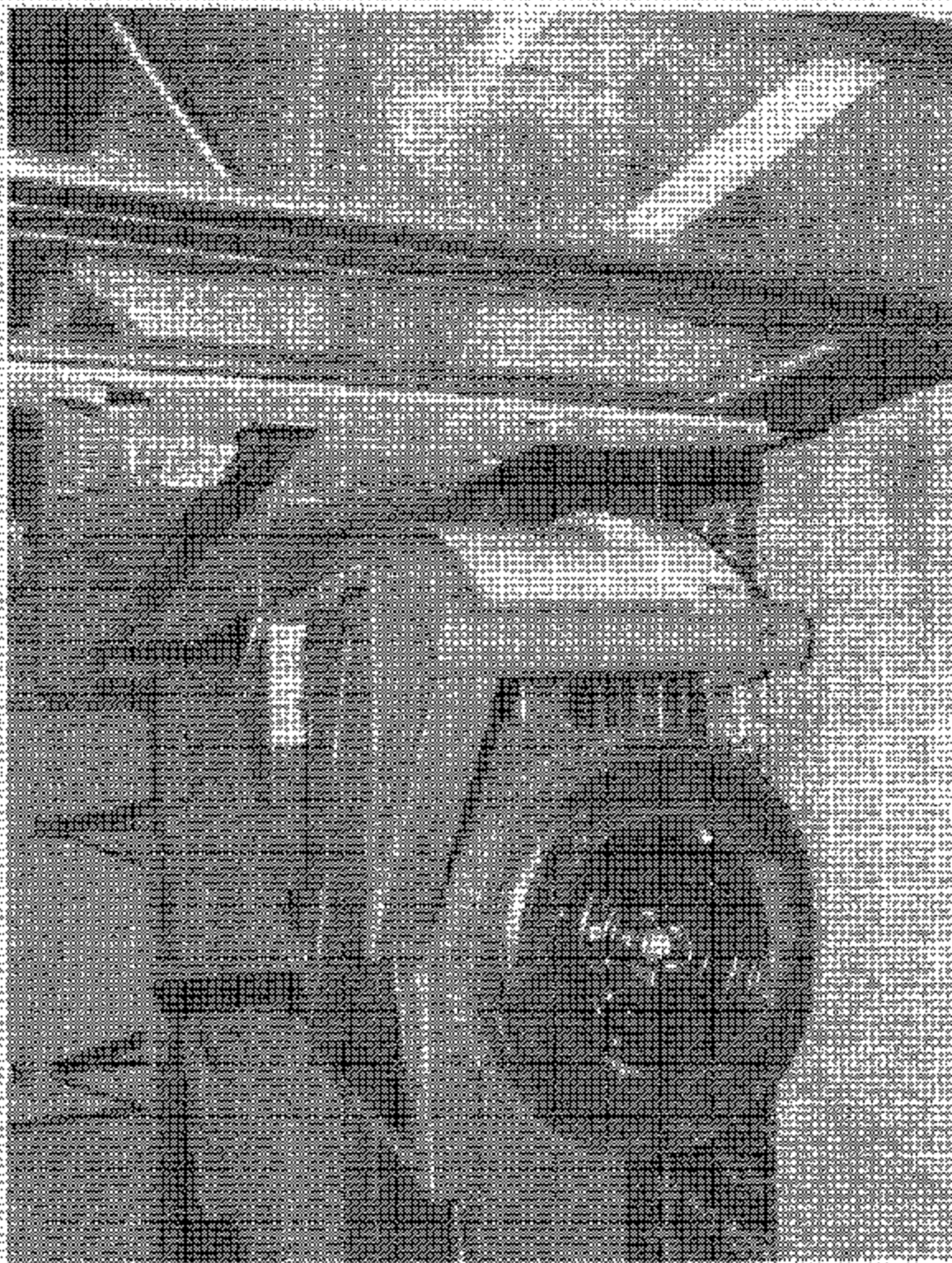
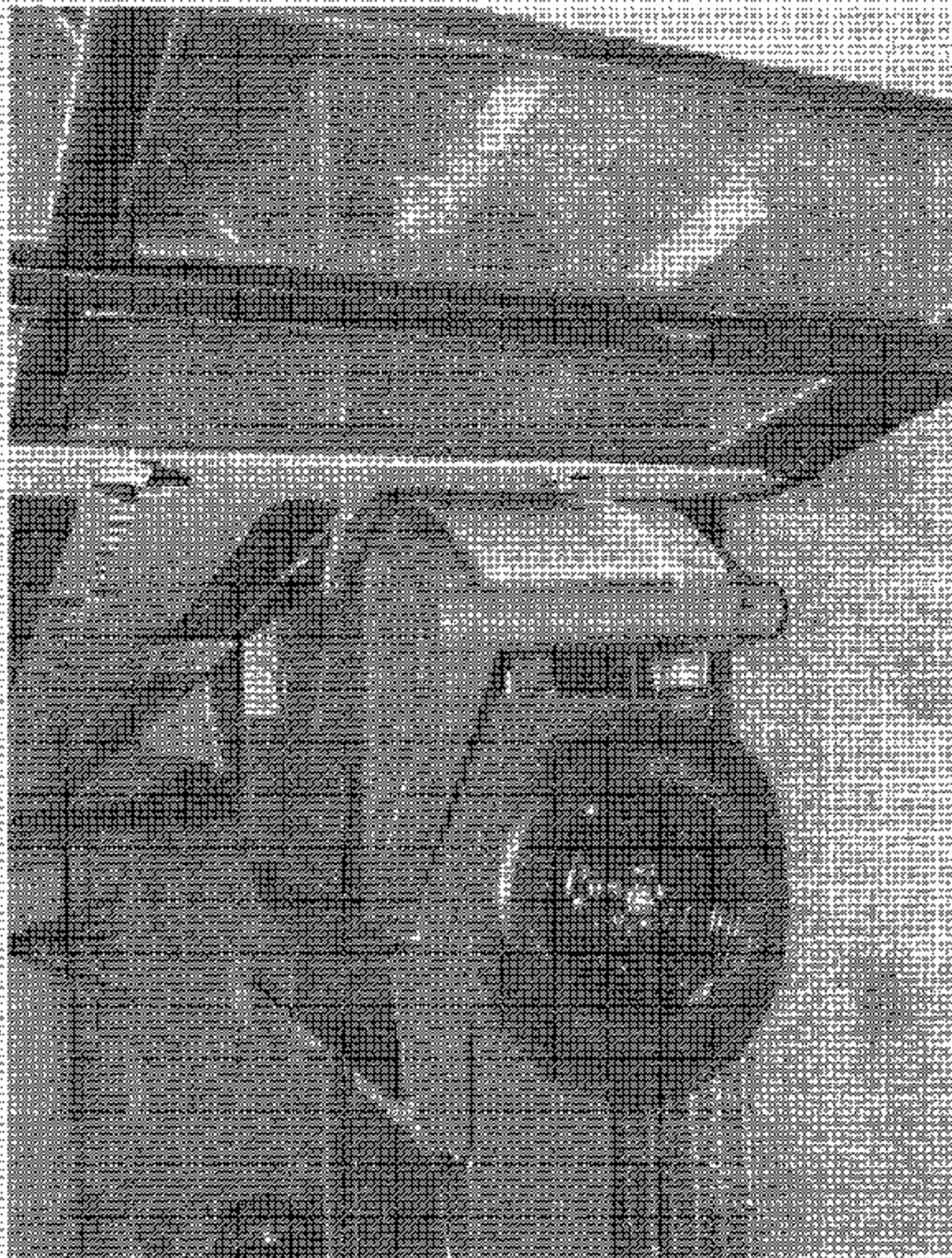


Photo taken by [illegible] (copyright [illegible])

Test Vehicle: 2003 American Transportation Corporation
FNV58 301 Side Impact Test

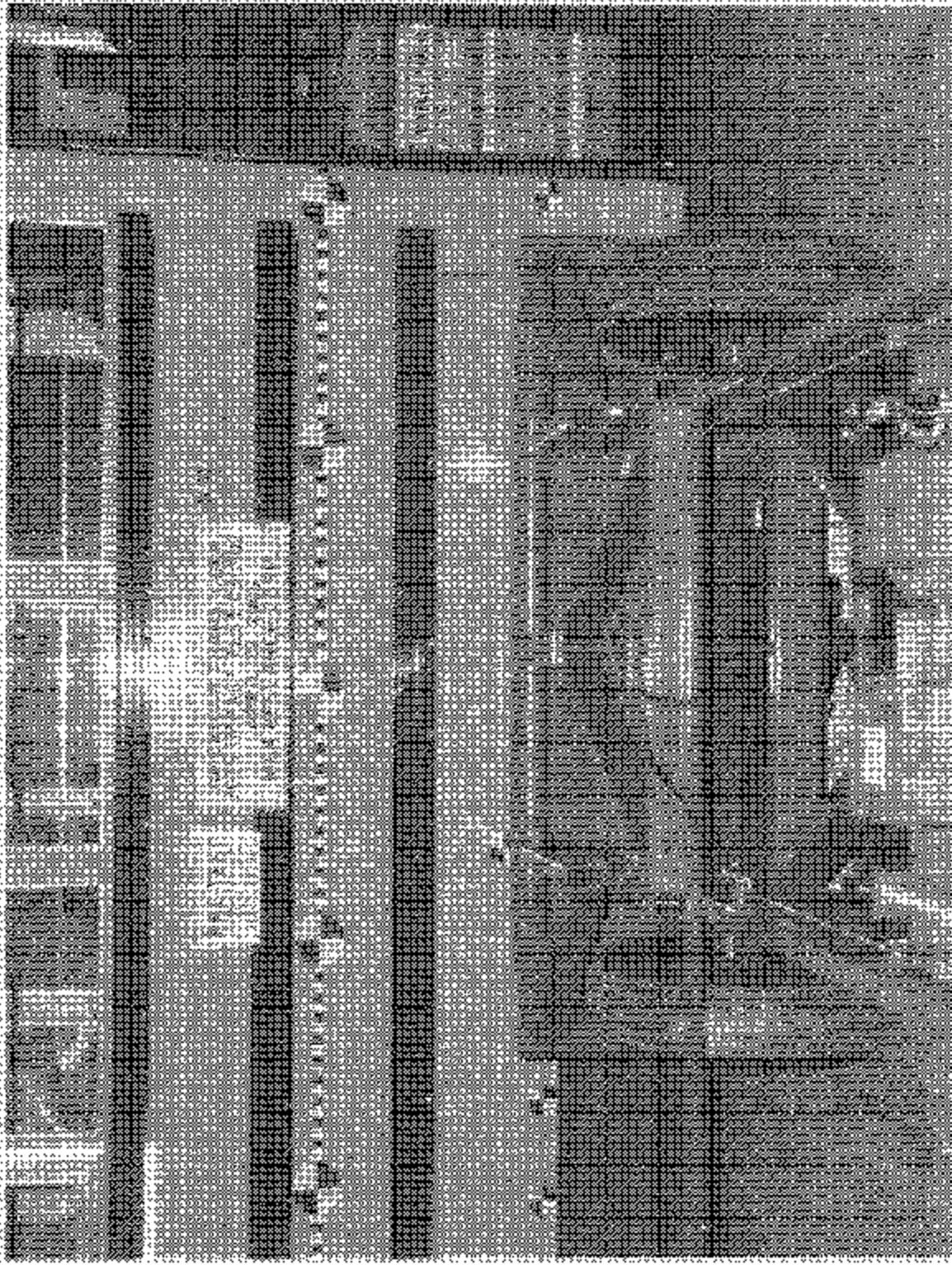
Test Date: April 22, 2003



Post-Test of Driver (Right Side)

Test Vehicle: 2003 American Transportation Corporation
Provisional: FMVSS 301 Side Impact Test

Test Date: April 22, 2003

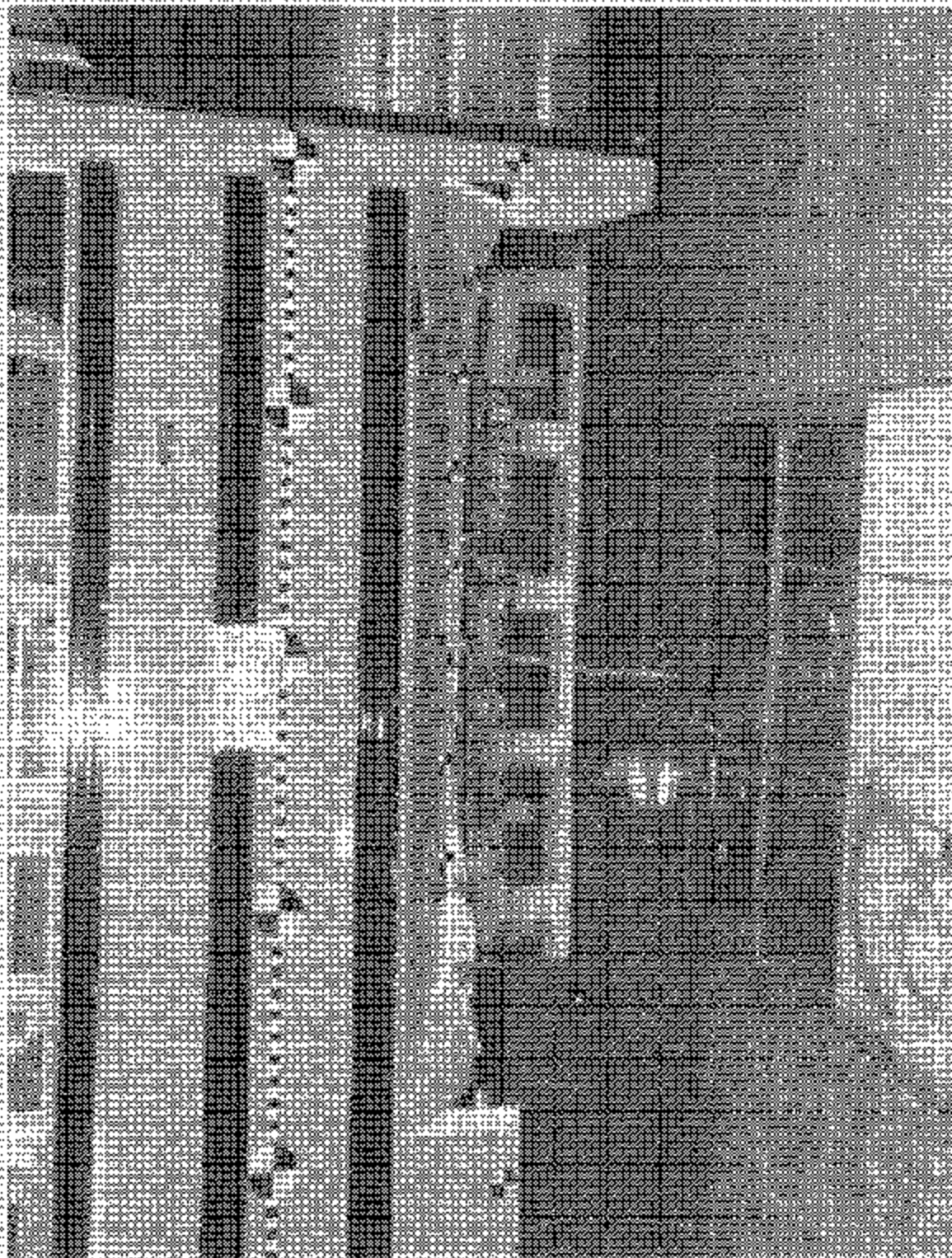


Vehicle Orientation

Test Vehicle: 2003 American Transportation Corporation

Procedure: FMVSS 301 Side Impact Test

Test Date: April 22, 2003



FMVSS 301 Side Impact Test

Test Vehicle: 2003 American Transportation Corporation
Procedure: FMVSS 301 Side Impact Test

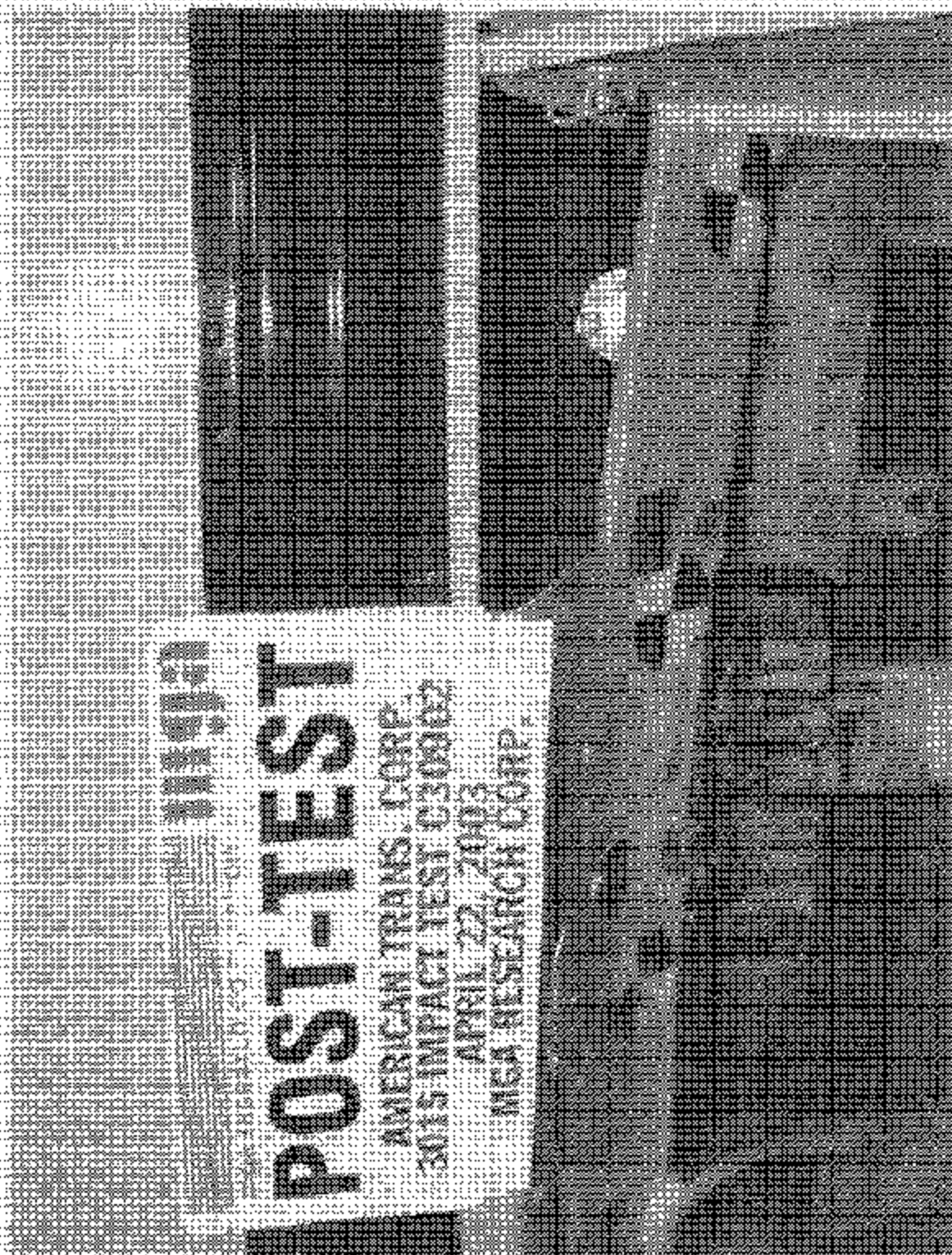
Test Date: April 22, 2003



Pre-Test of Fuel Cap and Tank Cap

Test Vehicle: 2015 American Transportation Corporation
Procedure: FMVSS 301 Side Impact Test

Test Date: April 22, 2013



Post-Test of Head-Cap and Torso Cage

Test Vehicle: 2003 American Transportation Corporation
Procedure: FMVSS 301 Side Impact Test

Test Date: April 22, 2003

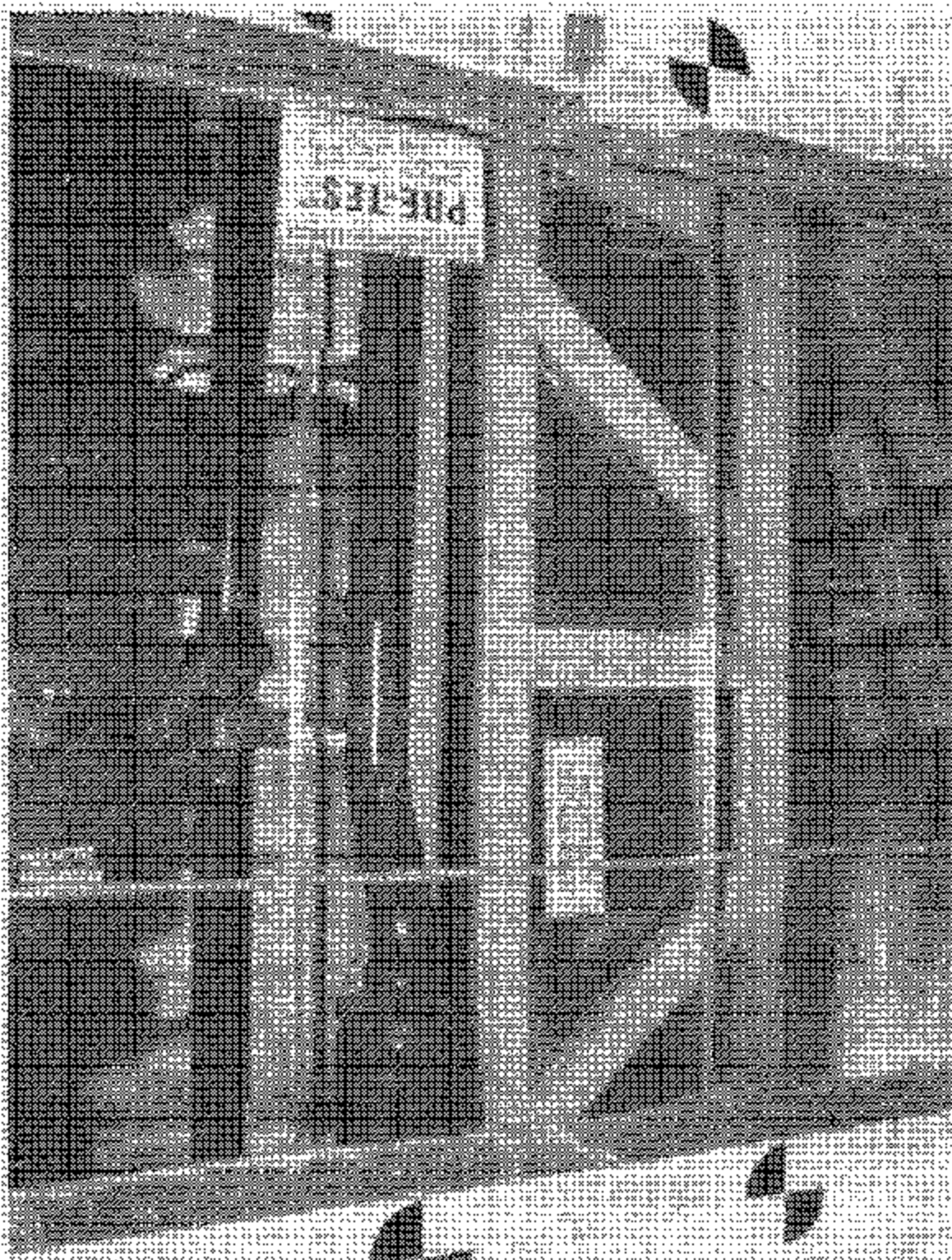
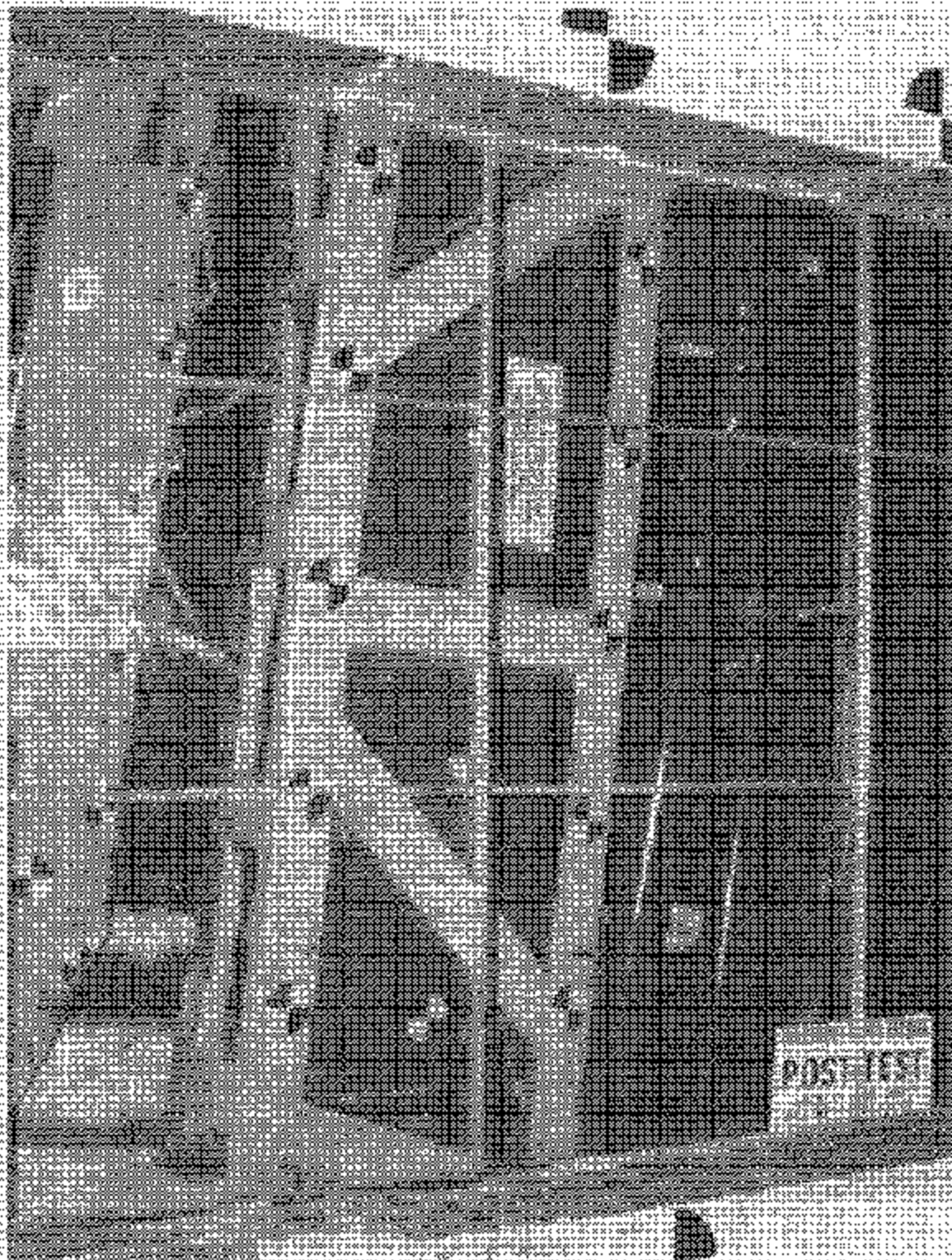


Figure 1: Side Impact Test (View 1)

Test Vehicle: 2003 American Transportation Corporation

Procedure: FMVSS 201 Side Impact Test

Test Date: April 22, 2003



Post-Test of Fuel Tank Compartment

Test Vehicle: 2003 American Transportation Corporation
Procedure: FMVSS 301 Side Impact Test

Test Date: April 22, 2003

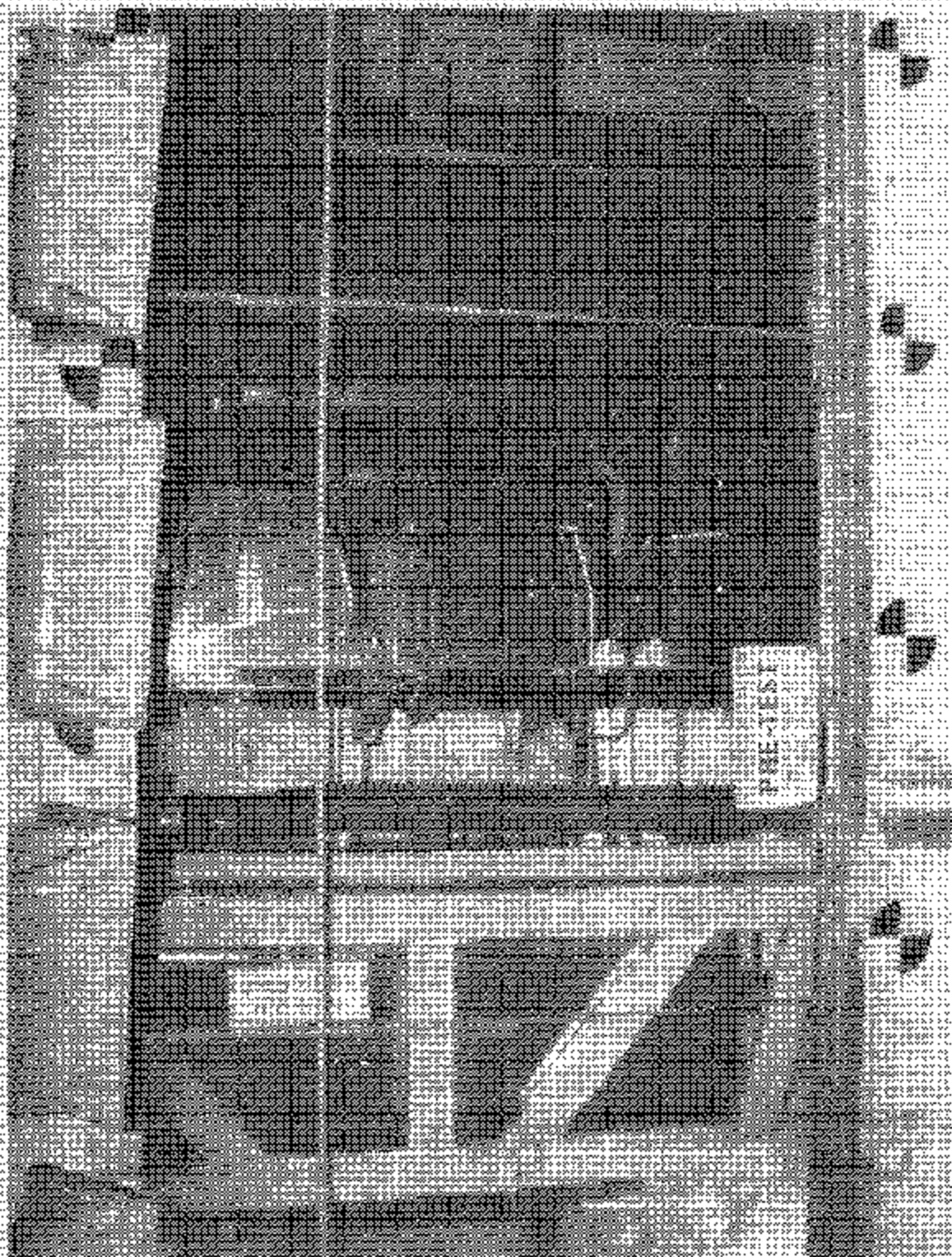
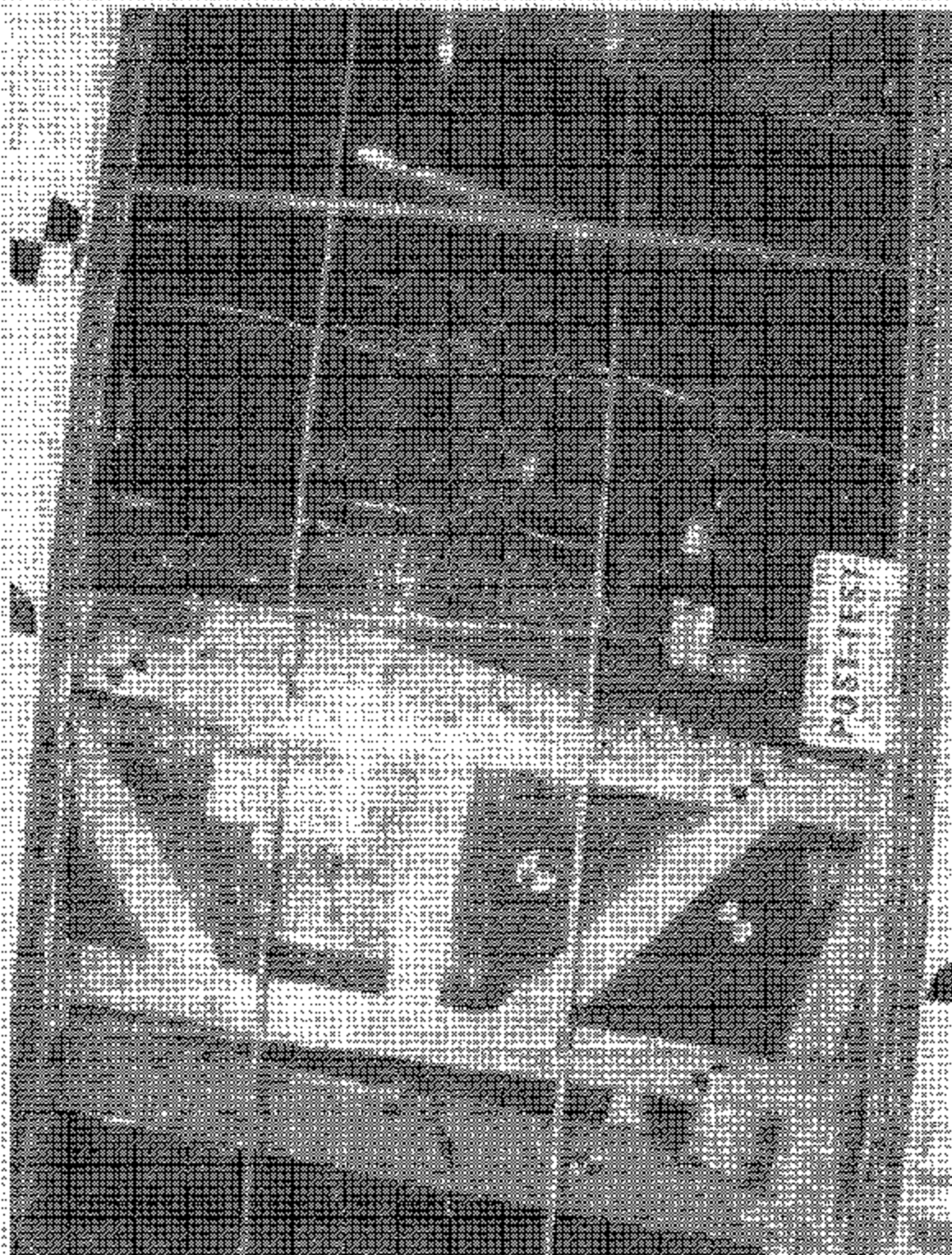


Fig. 1031 of FMVSS 301 (301-1031)

Test Vehicle: 2003 American Transportation Corporation
Procedures: FMVSS 301 Side Impact Test

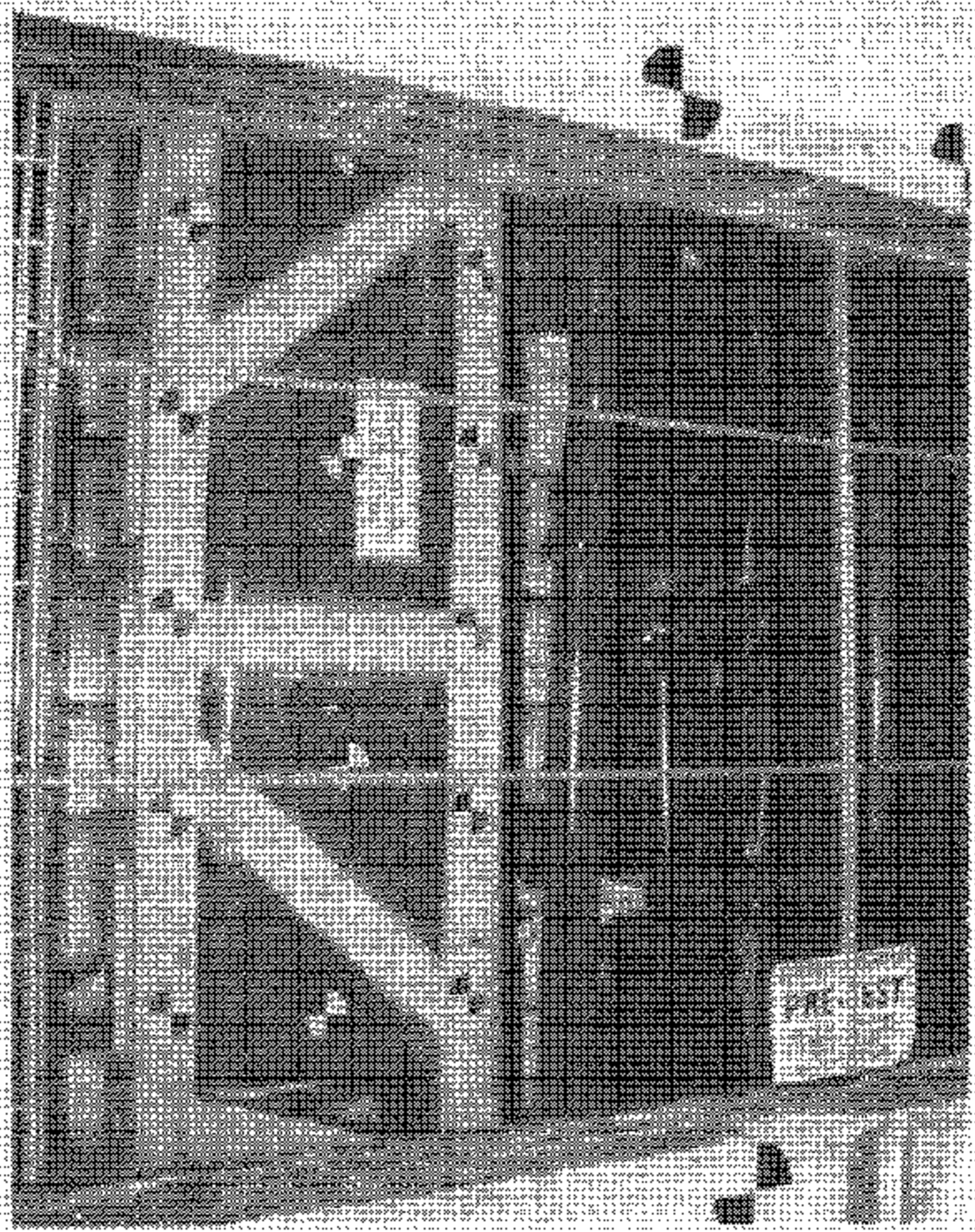
Test Date: April 22, 2003



Post-Test of Fuel Tank Usage (Page 42)

Test Vehicle: 2003 American Transportation Corporation
Procedure: FMVSS 301 Side Impact Test

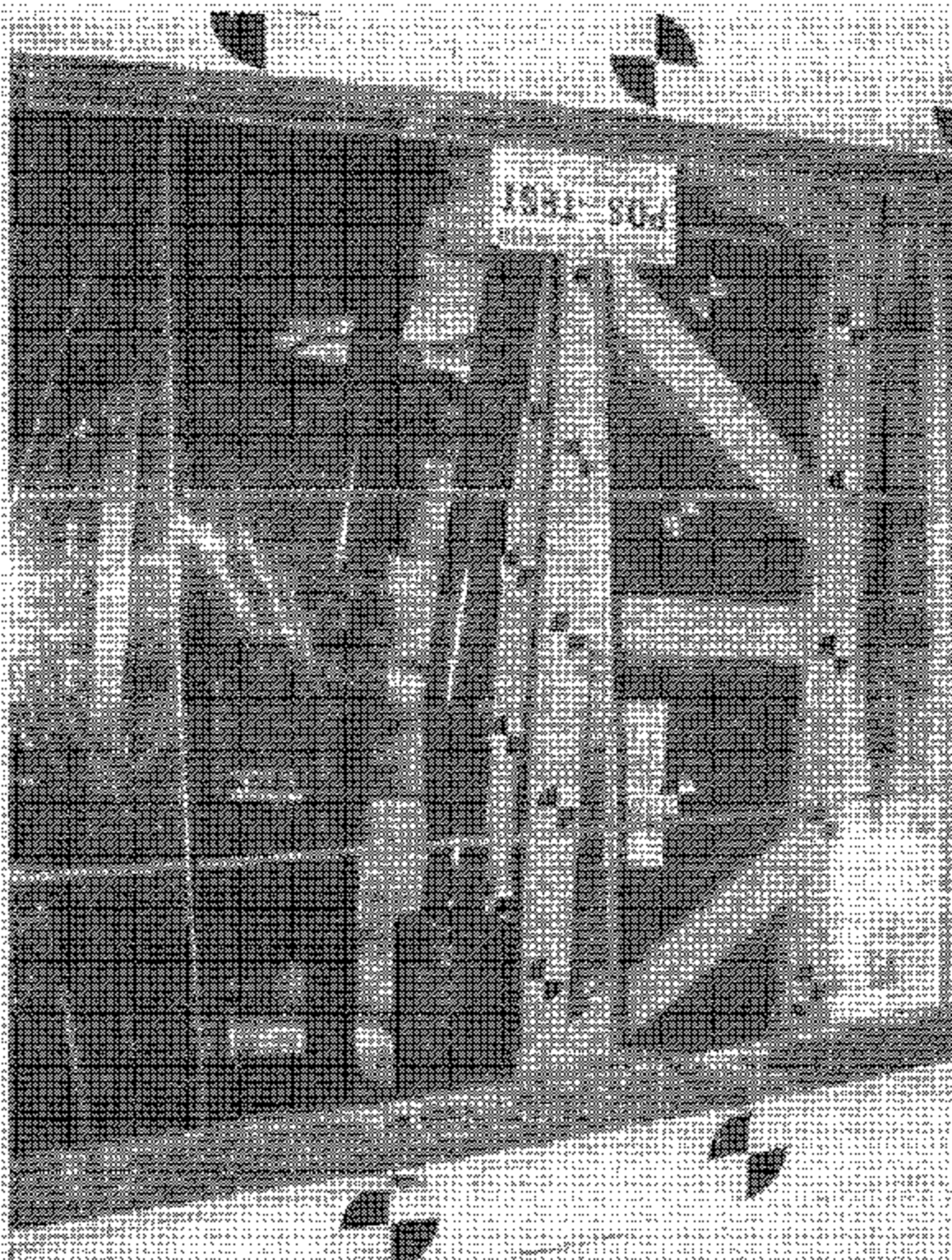
Test Date: April 23, 2003



Pre-Test or Post-Test Configuration

Test Vehicle 2003 American Transportation Corporation
Fitted to: F10VSS 301 Side Impact Test

Test Date: April 22, 2003



Test: Test of Side Impact Resistance

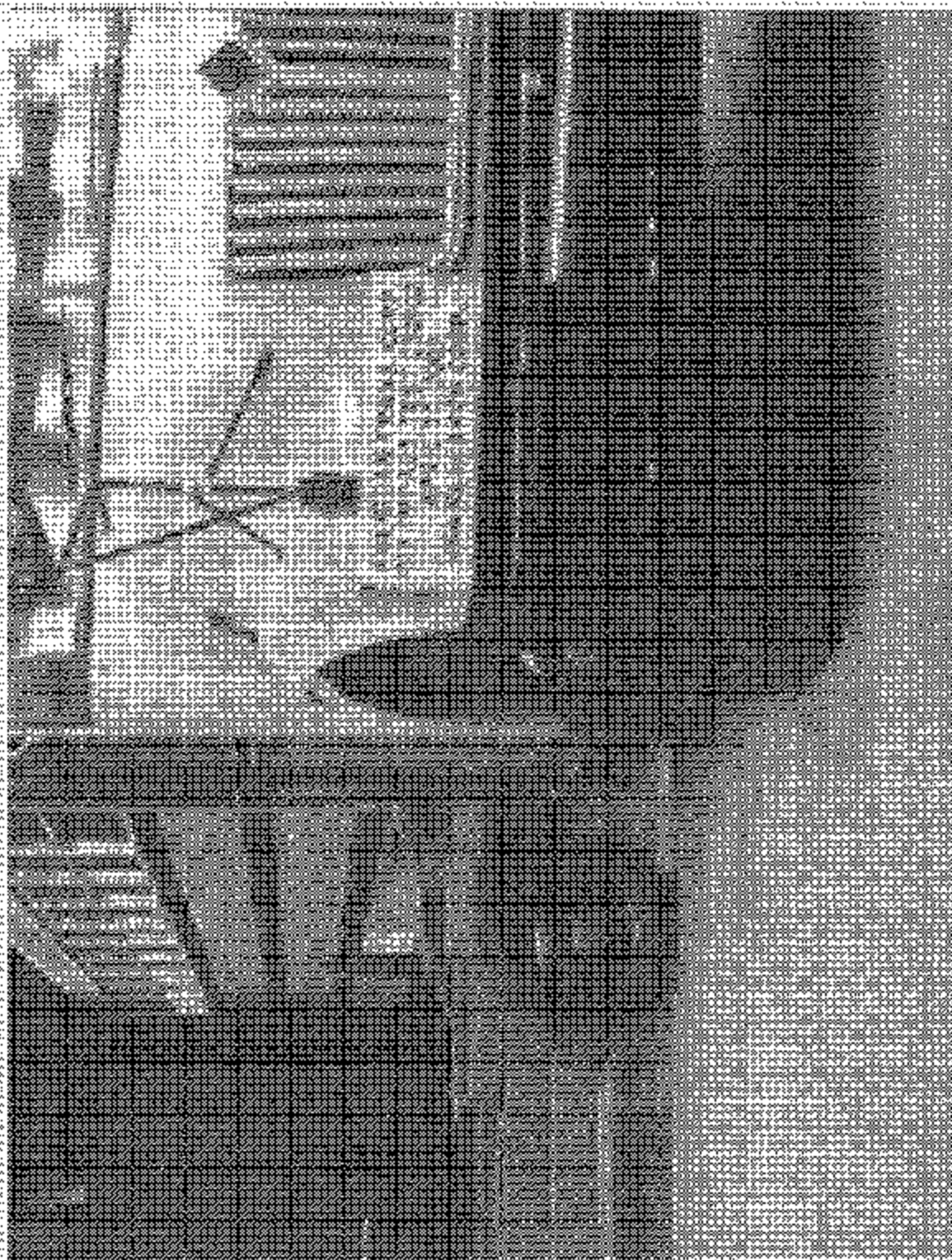
Test Vehicle: 2003 American Transportation Corporation
Provider: FMVSS 301 Side Impact Test
Test Date: April 22, 2003



Speed Trip Counter Display

Test Vehicle: 2002 American Transportation Corporation
Procedure: FMVSS 301 Side Impact Test

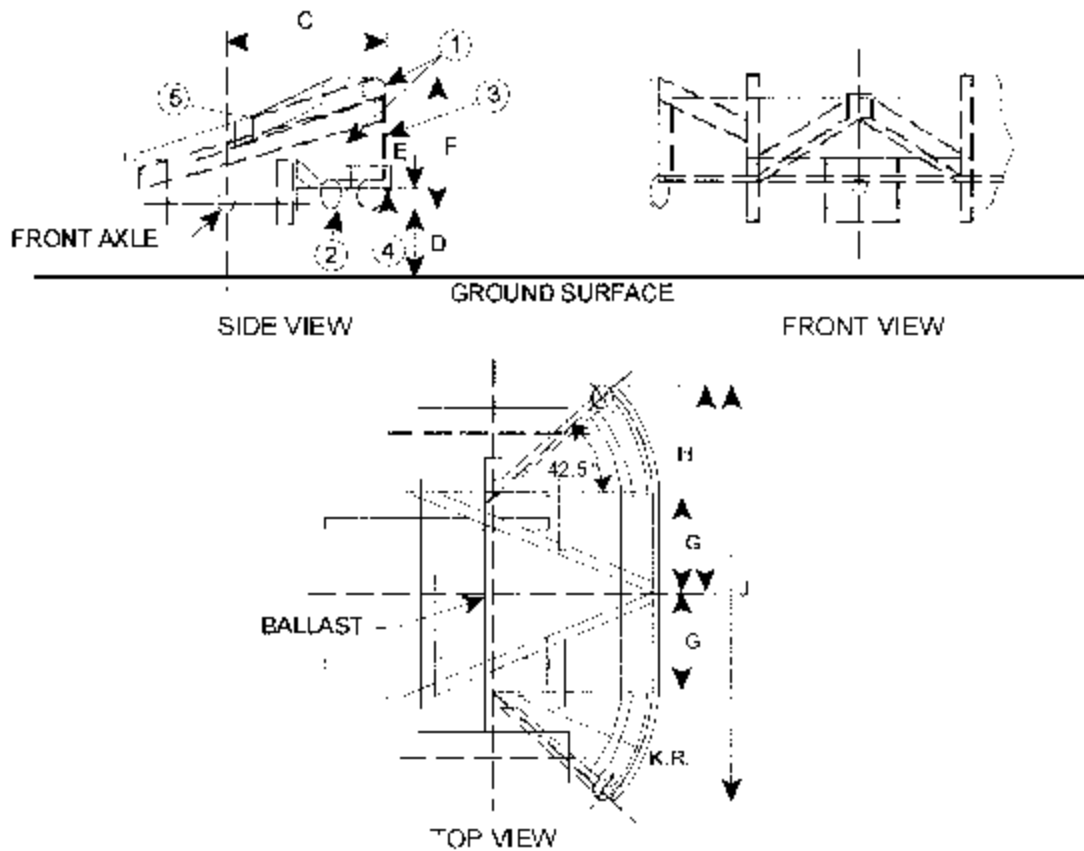
Test Date: April 22, 2003



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SECTION 6
BARRIER INFORMATION

CONTOURED IMPACT SURFACE FOR COMMON CARRIAGE



DIMENSIONS SHOWN IN TABLE ON NEXT PAGE

NOTES:

1. Upper Frame 4.0 in. dia x 0.25 in. wall (102 mm dia x 6 mm wall)
Steel Tubing (3 Sides)
2. Lower Frame 6.0 in. dia x 0.50 in. wall (152 mm dia x 13 mm wall)
Steel Tubing
3. Face Plate 0.75 in. (19 mm) thick cold rolled steel
4. Leading Edge 1.0 x 4.0 in. (25 x 102 mm) steel band, sharp
edges broken
5. All Inner Reinforcements 4.0 x 2.0 x 0.19 in. (102 x 51 x 5 mm)
steel tubing

Total Weight = 4,000 ± 50 lbs (1,814.1 ± 22.7 kg)

Weight at each Rear Wheel =

900 ± 25 lbs (408.2 ± 11.3 kg)

Weight at each Front Wheel =

1,100 ± 25 lbs (499.0 ± 11.3 kg)

Moments of Inertia:

$I_x = 271 \pm 13.6 \text{ slug-ft}^2 (367 \pm 18.4 \text{ kg-m}^2)$

$I_z = 3,475 \pm 174 \text{ slug-ft}^2 (4,711 \pm 236 \text{ kg-m}^2)$

DIMENSIONS FOR CONTOURED IMPACT SURFACE

LETTER	INCHES	MILLIMETERS
A	54.0	1372
B	15.8	401
C	30.0	762
D	5.25	133
E	3.75	95
F	24.75	629
G	18.0	457
H	39.0	991
J	78.0	1981
K	30.0	762

S.E.A., Inc. VIMF

Vehicle Inertia Measurement Facility

Test Date 04-01-2003
Date Printed 04-01-2003

Year 2003
Make MGA
Model FMVSS 301

Project # MGA
VIN

VIMF Test # 1750
Track Width 1527.8
Roof Height 769.6
Wheel Base 3044.2

Description Bus cart, Tire pressure RF 25 psi, LF, RR, LR 24 psi.

Load

Left Front	Right Front	Front Pressure
495.3	496.2	0.0
401.7	401.3	0.0

Lateral CG = 0 mm



Long. CG = 1362 mm

Total Weight
1794.4

Left Rear Right Rear Rear Pressure Tire Description Goodyear Power Steer G76-15

Applied Weights (kg)	Platform Angle (deg)	Motion Relative to Platform (mm)	CG Height (mm)
0.0	0.047	0.000	0.0
157.1	4.062	-0.413	401.3
306.9	7.721	-0.935	401.1
157.1	-3.962	0.454	401.0
306.9	-7.615	0.941	401.9

401.3

SSF = 1.904

Period (sec)	Platform Amplitude (deg)	Relative Motion (mm)	Pitch Inertia (kg-m ²)
4.978	3.887	0.316	4540
4.978	4.113	0.330	4540
4.978	4.039	0.323	4540
			4540

Period (sec)	Platform Amplitude (deg)	Relative Motion (mm)	Yaw Inertia (kg-m ²)	Roll/Yaw Product (kg-m ²)
3.265	3.119	0.228	4859	-7
3.268	3.013	0.217	4855	-6
3.265	3.131	0.229	4854	-7
			4859	-7

Period (sec)	Platform Amplitude (deg)	Relative Motion (mm)	Roll Inertia (kg-m ²)
1.103	2.786	1.055	383
1.105	2.734	1.184	383
1.105	2.649	1.171	382
			383